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**Priority storage** Start-up Maranti's application-aware switch aims to prioritize access to storage resources. PAGE 8.

**Qwest's test** The service provider looks to better exploit its national IP backbone and put an up-and-down 2001 behind it. PAGE 36.

# NetworkWorld

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December 10, 2001 ■ Volume 18, Number 50

SPECIAL REPORT: THE HP/COMPAQ MERGER

## Searching for Acceptance

Since announcing the planned merger in September, CEOs Michael Capellas of Compaq and Carly Fiorina of Hewlett-Packard have seen their deal criticized from all angles. Analysts are blasting the companies in the press, and some members of the HP family have threatened to vote against the merger. In this story we get expert opinion about some of the union's fundamental goals, including:

- HP and Compaq's commitment to create a company focused on industry-standard products.
- The new company's effort to avoid disrupting customers by immediately providing a detailed, unified product roadmap.
- The company's desire to bring new, innovative software and hardware products to market.

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# Don't like IKE?

## Internet Key Exchange proposals tout tighter VPN security.

**■ BY TIM GREENE AND CAROLYN DUFFY MARSAN**

SALT LAKE CITY — The Internet Engineering Task Force this week will consider replacing the protocol that manages encryption keys for IP Security VPNs with a new set of rules that is admittedly less flexible but could lead to equipment that is more interoperable, supports better security and is easier to configure.

At issue is Internet Key Exchange (IKE), the key management protocol used in IPSec VPNs that experts say is so complicated that it stands in the way of interoperability. And the chatty method IKE uses to initiate security sessions theoretically leaves VPN devices open to denial-of-service (DoS) attacks.

To address these shortcomings, some of the IETF's most influential participants have stepped forward with three proposals to replace IKE: IKEv2, Just Fast Keying (JFK) and Sigma. Each eliminates certain features included in IKE, meaning the resulting protocols are more rigid. This rigidity also means there will be fewer parameters for users to configure when the IKE replacement is integrated in VPN devices, making it easier to set up a VPN, experts say.

The proposed IKE replacements would also make it easier to establish secure tunnels across the Internet between IPSec VPN equipment made by multiple vendors. This interoperability would make it simpler to create VPNs with business partners, suppliers and customers. As the use of VPNs increases — and market research firm IDC projects spending on VPN gear will grow from $1.8 billion this year to $3.24 billion in 2005 — these extranets will become more important to enterprise users.

Today, it is possible to get multivendor IPSec gear to work together, but it can be a struggle. "Users trying to configure interoperability between two vendors' equipment are going to be perplexed unless one or the other vendor has sat down and worked it all out," says Wray West, of VPN equipment maker Enterasys Networks.

IKE replacement is going to be a hot topic at the IETF this week, says Marcus Leech, an IETF Security Area director. Leech expects

See JFK, page 14

**PKI: Build, buy or bust? We shed light on the black art of setting up a public-key infrastructure. Feature: Page 50.**

# Users cry foul over IBM bills

**■ BY JOHN FONTANA**

CAMBRIDGE, MASS. — The first effects of IBM's revamped software licensing model are catching customers off guard and driving up costs for some IT executives by more than 80%.

Enterprise customers and consultants say the increase is the byproduct of the October kickoff of IBM's retooled Passport Advantage volume-licensing program, which among other changes now bundles base technical support and software upgrades into a single package called Software Maintenance.

"My yearly licensing bill went from $60,000 to $110,000," says an IT executive for a midsized hospital in the Midwest using Lotus Notes/Domino. "You get the license, the maintenance and the support whether you want it or not."

The executive, who is renegotiating the charges, called the Software Maintenance combination "outrageous. I don't know who came up with this but they are

See Lotus, page 77

**More!**

Read about the shift toward new software licensing practices for companies such as Microsoft, Oracle and IBM.

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Fred von Lohmann of the Electric Frontier Foundation says yes. Robert Holleyman, CEO of the Business Software Alliance, begs to differ. **Page 49.**

### PKI: Build, buy or bust?

Feature: PKI is becoming a necessary component in every company's security arsenal, but setting up a PKI can be difficult. If PKI is on your radar screen, you may want to read this in-depth explainer. **Page 50.**

### Increase the impact of your streaming.

Review: Vividon's Streaming Delivery Accelerator is a low-cost, high-density cache for streaming media. **Page 57.**

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## News

### Setting service availability specs

See how IBM, HP, Compaq, Intel and others have formed the Service Availability Forum to create open interface specifications.
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### 3G update

Read about the breakup of the Toshiba/Siemens alliance to develop 3G mobile phones.
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### Which way to wireless data?

Follow the brewing debate among some wireless service providers on how to migrate current infrastructures to support data-oriented 3G services.
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Will the latest round of job cuts at Novell also mean more product cuts? Add your thoughts. **DocFinder: 7240**

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Convergence does voice faster, better and cheaper.
Edge Columnists Daniel Briere and Beth Gage discuss the next phase of convergence.
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New Year's resolutions
Net.Worker Columnist Jeff Zbar outlines some planning strategies for 2002.
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Events Editor Sandy Gittlen discusses insights from a recent State of the LAN/MAN Town Meeting in Long Beach, Calif.
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### Help Desk

Ping problem
A reader writes: "I cannot ping other devices from my computer. Error message — PING: transmit failed, error code 65." Read what Help-Desk Columnist Ron Nutter suggests.
**DocFinder: 7343**

■ **CONTACT US** Network World, 118 Turnpike Road, Southborough, MA 01772; **Phone:** (508) 460-3333; **Fax:** (508) 490-6438; **E-mail:** nwnews@nww.com; **STAFF:** See the masthead on page 16 for more contact information. **REPRINTS:** (717) 399-1900

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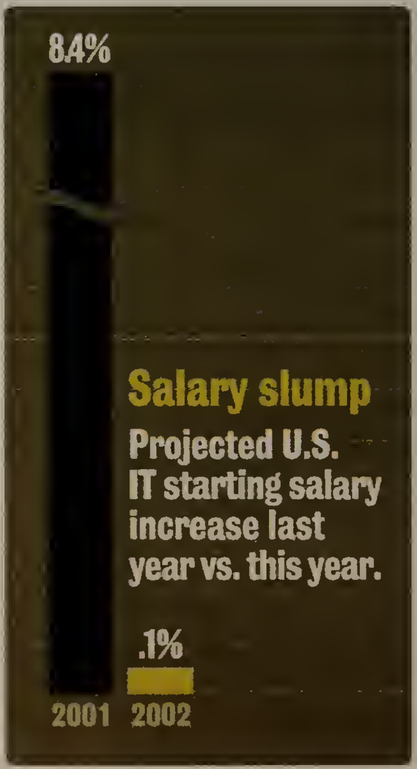
# News Bits

## Microsoft flags flaw in Outlook Web Access

■ A flaw in the Outlook Web Access module in Microsoft's Exchange 5.5 e-mail system could allow unauthorized access to users' mailboxes, the company warned last week. The problem lies in the way Outlook Web Access handles inline script in HTML e-mail messages. An attacker can get complete control over a mailbox when the attacker's e-mail message with embedded malicious code is opened using Microsoft's Internet Explorer and Outlook Web Access. Although the attacker can delete mailbox contents, move messages and send messages as if he were the user, it isn't possible to send e-mail to addresses in the user's address book, preventing a mass-mailing attack, Microsoft says. A patch is available from Microsoft's TechNet Web site.

## IT salaries seen flat

■ The days of ever-fatter paychecks for IT experts are over, according to a new study. U.S. starting salaries in the industry are expected to increase on average by just 0.1% in 2002, compared with the 8.4% rise forecast this time last year, says RHI Consulting. There were bright spots, with industries including healthcare, financial services and real estate predicting strong demand for IT professionals. As for specific job titles, the one with best prospects is applications architect, for which RHI predicts a 6.7% increase in average starting salary. Coming in a close second are consulting and systems-integration directors, who should see an average jump of 6.1%.



**Salary slump**

Projected U.S. IT starting salary increase last year vs. this year.

## Levin to retire from AOL Time Warner

■ AOL Time Warner CEO Gerald Levin will retire from the company in May and will be succeeded by current Co-COO Richard Parsons. After spending almost 30 years at Time Warner, Levin decided to leave the newly merged company to "turn his energies to issues he feels passionate about, and [he's] determined that this is the right transition period," according to an AOL Time Warner spokeswoman. Levin's departure also comes as part of an overall restructuring plan designed to streamline management of the merged entity, which was formed last January when Time Warner wed AOL. Steve Case will remain the company's chairman.

## Yahoo Finance deploys iPhrase search software

■ Want to know how much cash IBM has? Or how Cisco's price/earnings ratio compares with Nortel's and Lucent's? Or what the most active tech stocks of the day are? Yahoo Finance this week is unveiling new search features that let users ask questions just like these, in plain English, and then replies with data condensed in a table, for example. In other words, no long lists of links to sort through. Powering the search features is One Step Information Access software from Cambridge, Mass., start-up iPhrase Technologies. Try it out at http://finance.yahoo.com.

## Network Associates revamps executive roster

**Hodges has been promoted to president at Network Associates.**

■ Antivirus software maker Network Associates last week reshuffled its executive lineup, promoting Gene Hodges to president. Current President George Samenuk, who joined Network Associates earlier this year and has led its resurgence, will retain his position as chairman and CEO. Hodges was president of Network Associates' McAfee division, which accounts for 60% of the company's revenue. He will be replaced by Art Martin, who was senior vice president of worldwide sales and marketing at CrossWorld Software. CFO Steve Richards will take over as COO.

## Bowstreet gets a new CEO

■ Web services company Bowstreet last week announced that its CEO, Bob Crowley, had left the company and that Gary Haroian, CFO, will act as interim CEO until a replacement is found. Bowstreet declined to say why Crowley left. Before Haroian joined the company in April 2000, he was senior vice president of finance and administration at Concord Communications, a network management company.

## FCC declines to delay ultrawideband vote

■ At its meeting this Wednesday, the Federal Communications Commission will go ahead with a vote on whether to authorize the use of ultrawideband wireless communications. The decision to schedule the vote is a rebuff of a U.S. Department of Commerce request to delay action for two months. Commerce Secretary Don Evans, in a letter to FCC Chairman Michael Powell, said the delay would allow further study on how UWB transmissions might affect a range of existing frequencies used in public safety and defense communications. UWB uses very low-powered, very rapid energy pulses to transmit data over a range of frequencies. It's used in ground-penetrating radar and positioning systems. FCC approval would pave the way for a range of UWB-powered wireless communications devices and networks.

## Advocacy group raps cybersquatting law

■ If you own a domain name resembling the identity of a big, deep-pocketed company, beware, the Electronic Frontier Foundation said last week, because you could be dragged to Virginia to defend it.

Pursuant to a provision in the 1999 U.S. Anticybersquatting Consumer Protection Act, domain name disputes could be required to be settled in the state of Virginia if the party staking claim to a domain name brings the suit there, regardless of whether the plaintiff or defendant have ties to the state. This is because domain name registrar Network Solutions has its headquarters in Virginia. The EFF was in an appeals court last week to fight a lower court ruling that a Canadian domain name holder who was sued by a large Canadian company for the rights to a domain name could proceed in Virginia because of the provision.

## ■ The Good The Bad The Ugly

**Lawson Software,** a maker of business software, continues to buck industry trends. Not only is the company profitable, but it launched one of the tech industry's few IPOs Friday with an opening price of $14 per share on the Nasdaq market.

**Larry Ellison,** Oracle's CEO: "The idea that Web services solve all known problems is lunacy."

**Gene Hodges,** Network Associates' new president, commenting on whether the proliferation of destructive viruses is likely to wane: "We see no end in sight."

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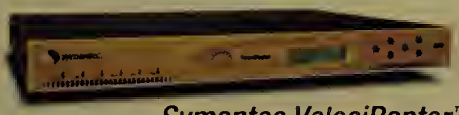

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# Start-up readying 'intelligent' switch

■ BY DENI CONNOR

MILPITAS, CALIF. — Newcomer Maranti Networks is readying a storage switch that uses intelligence about stored application data to grant prioritized access to it.

Maranti's multiprotocol chassis — what company executives call an "application-aware storage switch" — is designed to accomplish what Maranti says would take a complex web of separate products to do using existing technology.

"Traditional SANs are monolithic in how they handle data transfer, in that they don't vary performance or priority for each application," says James Gruener, an analyst at The Yankee Group. "These guys are customizing the switch based on the application's characteristics."

The device, which is expected to ship in the second half of next year, will be analogous to Layer 4 to 7 LAN switches promoted in years past by the likes of Alteon and ArrowPoint. Those start-ups have since been swallowed up by Nortel and Cisco, respectively.

Maranti, with $31 million in venture funding, is one of dozens of new networked storage companies. The start-up, led by former Efficient Networks executive Kuldeep Sandhu, gets its name from a tall tree with mahogany-colored wood because company officials hoped to emulate some of the success of other network start-ups named after trees, such as Juniper and Sycamore.

While Maranti is being secretive about the size, price and other details of its product, some information about the offering has begun to trickle out.

The box will connect to servers via Gigabit Ethernet and to storage resources (direct- and network-attached, as well as storage-area networks) via a mix of Fibre Channel and iSCSI blades. Observers expect ports to number in the hundreds, making the device as big as or even bigger than existing high-end storage switches.

Customers will be able to use software to assign ports to certain applications, and agents residing on storage devices and servers will keep the switches abreast of the status of stored data and applications.

"We distinguish between those applications and provide service assurances based on them," says Harish Nayak, a Maranti co-founder and the company's vice president of marketing.

A switch could give end users trying to access data in enterprise resource planning systems priority over those fetching e-mail. The agents could also help inform the switch about which storage resources were available to be included in virtual pools accessible to any application or user.

"By implementing intelligence at the port level vs. the system level as present Fibre Channel switches do, Maranti can enable virtualization, quality of service and replication to happen within the network," says Enterprise Storage Group analyst Steve Duplessie.

Company officials say that for a customer to receive the same level of service it would get from a Maranti switch, the customer would need to lash together a SAN, a virtualization appliance, an IP network gateway, plus separate management tools in what would be a far more complex setup.

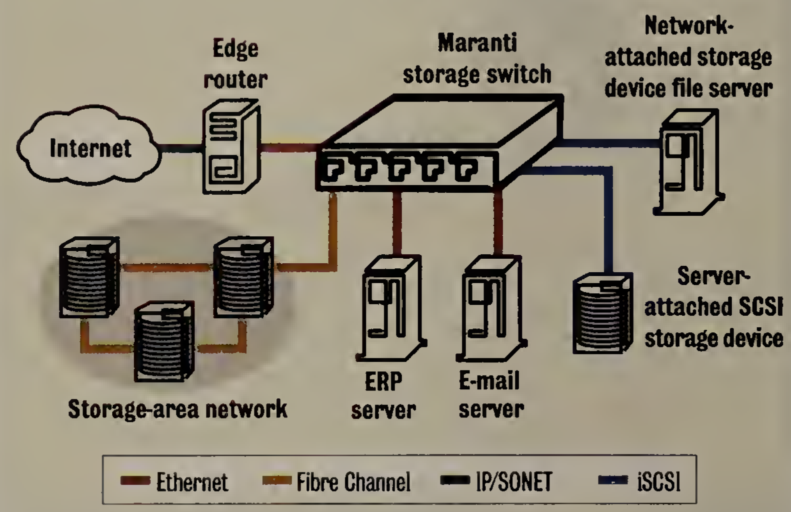
Maranti's offering will differ from switches, such as those from Brocade, that include "brain" blades for handling virtualization and other sophisticated storage networking techniques, Duplessie says. By distributing the handling of such features across ports, the Maranti switch may be less susceptible to performance falloffs, he says.

Maranti, which has about 50 employees, is entering a segment of the storage market with few direct competitors. Cisco has funded a start-up called Andiamo Networks that is said to be working on a similar switch. Separately, a company called Surgient has introduced an application-aware switch, but the device initially is more oriented toward content delivery.

Maranti: www.marantinetworks.com

**Storage central**

**Maranti's application-aware storage switch will sit between servers and storage resources.**



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# Oracle aims at competitors . . . with mixed results

■ BY LINDA LEUNG AND JOHN COX

SAN FRANCISCO — Claims by Oracle executives about the prices and powers of its newest software products were greeted with skepticism by analysts and customers at last week's Oracle Open World show.

That skepticism could translate into delays in adopting the new products, as network executives make sure the software is stable and performs as promised. Oracle CEO Larry Ellison and his lieutenants presented a platoon of early users of the Oracle 9i Database, with its recent clustering software called Real Application Clusters (RAC), and of the Oracle 9i Application Server. RAC is software that lets an Oracle database be spread over an array of low-cost servers.

Ellison touted RAC's virtues and predicted that 50% of Oracle's application customers will use it in the next two years.

But one longtime Oracle customer says he won't use RAC until he's seen proof from plenty of other customers that it works as advertised.

"Oracle has attempted clustering for 10 years, and it has never got it right," says Marty Boos, vice president of IS for Digital River, which hoists e-commerce sites for some 11,000 clients. "We went through Oracle Parallel Server [an earlier clustering software], and we don't want to go through that mess again."

Still, Boos says his company will upgrade from the 8i to 9i database by mid-2002. "The most exciting [upcoming] feature of 9i is that you can store XML files in the database and query them," he says. This feature, called Project XDB, was demonstrated at Open World and will be part of 9i release 2.0 later in 2002.

Ellison's claims about Oracle's software pricing fared even worse with users. Users would have to pay $140,000 for a 500-user license for Microsoft Exchange running on a four-CPU server, Ellison said, citing what he said are Microsoft's published prices. Oracle can offer customers an e-mail server for the same number of users on the same hardware for $80,000, he said, because the Oracle 9i database comes bundled with an e-mail server.

Turning to IBM, Ellison said a user would have to pay $272,000 for the software to build a portal for 25 users. On the other hand, Oracle bundles portal software with its application server, so users could build a similar portal using Oracle's software for $40,000, he said.

"It seems too good to be true," says Boon Lim, an Oracle database administrator with ePolicy, a Los Angeles online insurance company. "Notice he didn't say anything about [Microsoft] SQL Server pricing." SQL Server is Microsoft's rival database. Exchange has an array of back-end administration features that might be missing from the Oracle e-mail server, Lim says.

> **"Oracle has attempted clustering for 10 years, and it has never got it right."**
>
> **Marty Boos**
> Vice president of IS, Digital River

The unveiling of 9i Application Server Version 2.0 also met with mixed assessments. The new version supports the Java 2 Platform Enterprise Edition Version 1.3 specification and myriad Web services standards. It also includes new voice and wireless features that will let users set up e-mail and groupware applications that can incorporate voice messages and work over wireless connections.

For Digital River's Boos, the improved Java support was a long time coming. Digital River is porting all its e-commerce applications to Java and relying on Version 1.0 of the application server to serve content from the Oracle database.

"Oracle was previously not known to have an elegant application server product," Boos says. Of special importance to him are the Version 2.0 performance improvements, a new lightweight Java Virtual Machine and the existing built-in Web portal software. Still needed, he says, are better management tools.

*IDG News Services contributed to this story.*

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# Web gear aimed at corporate networks

## Web acceleration, caching gear for speeding up enterprise intranets and CDNs on tap at Internet World.

■ **BY PHIL HOCHMUTH AND JASON MESERVE**

**F5's Edge-FX Cache can be used to distribute content such as Webcasts over a WAN.**

NEW YORK — With service provider markets in the dumps and most dot-coms a distant memory, vendors will be looking to pitch their Web and content-networking wares to corporate customers at Internet World 2001 this week.

F5 Networks, Radware, CacheFlow and Network Appliance will have new products that could help increase the speed and security of Web traffic, streaming media and content networking for large companies.

F5 will have an updated version of its Edge-FX Cache, which can now act as a content-delivery device, along with improved security and management features. The appliance sits in a data center in front of Web servers, acting as a Web cache for static pages. The box could also sit at an enterprise branch office, acting as a content-delivery device, and a local Web cache for intranet users.

New features include hardware-based Secure Sockets Layer encryption, allowing the appliance to handle 10 times more SSL connections than previous versions, which relied on software-based SSL processing. A Distributed Edge Management feature allows an administrator to reconfigure a single Edge-FX, and have the changes replicated to other Edge-FX caches in a geographically dispersed organization.

The change of focus to enterprise organizations by Web gear makers could be seen as last-resort marketing, analysts say.

"There's no business left with the dot-coms, so what else are you going to do but move and refocus on the enterprise?" says Peter Firstbrook, an analyst with Meta Group. "At the same time, the enterprise is moving up to the dot-com scale in terms of Internet activity. All of that was formally done by the Amazons of the world, and now the GMs and the Toyotas and United Airlines are moving into that and could be considered as having high scalability requirements."

Even with that, some enterprise users who have Web caching and acceleration gear are waiting on new Web gear and content delivery network (CDN) purchases.

"A lot of what we've proposed has been cut back," in terms of new IT projects, says Brian Terry, vice president of IT at People's Bank in Bridegport, Conn. People's Bank uses F5's Big IP server load-balancing product, but he will probably pass on the vendor's new CDN/caching appliance because content networking is not in his company's plans or budget.

Web gear vendors will be looking to break down such resistance at Internet World.

CacheFlow will announce a new feature set for its cIQ Content Delivery family of products that will let enterprise customers better manage and distribute streaming content to caching servers in a network. CacheFlow is specifically targeting content that is broadcast on a schedule.

With the new features, CacheFlow users will be able to operate broadcasts, where content is shown at 9 a.m. EST and again at 9 a.m. PST. Using the cIQ Director product, network administrators could push the content to caching servers on the West Coast before the scheduled broadcast, allowing West Coast users to grab a local copy of the content, rather than going across a slower WAN connection and hitting an overloaded origin server.

Radware will introduce its Peer Director appliance for helping large organizations and service providers better control their Internet routers. The box can be used in networks with connections to multiple ISPs ("multi-homed" networks) to provide traffic management and enforce network access rules for multiple Internet links.

Network Appliance will debut a Camera-to-Viewer initiative, which certifies that products and services from certain partners will work together when creating streaming media content. The drive behind Camera-to-Viewer is to create a blueprint for content delivery that involves creating, editing, publishing and serving content to users. ■

# Enterprise CDNs driven by streaming

■ **BY JENNIFER MEARS**

SAN JOSE — If content delivery network technology is going to continue making inroads into corporate networks it will need to offer users more advanced features, such as better transactional support, management tools and improved storage capabilities.

That's the conclusion of many presenters and attendees at The Content Networking Event Fall 2001 last week.

CDNs emerged about two years ago with companies such as Akamai Technologies linking hundreds of caching servers that they deployed at the edge of dozens of public networks. The idea was to move content closer to end users, thereby improving performance.

CDNs are now being slowly adopted in corporations. However, instead of moving Web pages, the focus is on delivering bandwidth-intensive streaming media and business applications without sacrificing network performance or shelling out capital to add servers and bandwidth to support them.

The next step is to enable transaction processing and application delivery, analysts say. Web services, such as those based on Microsoft's .Net technology, will need a delivery mechanism, and CDN technology, because of its distributed architecture, will play an important role, says Michael Hoch, an analyst with Aberdeen Group.

Volera executives say they are seeing growing demand in the enterprise market and the company is adding to its sales team as a result. "The pickup in [enterprise] CDNs is there," says Simon Khalaf, Volera's president.

Indeed, there are companies that have deployed enterprise CDNs. For example, Dow Chemical uses Cisco's CDN technology for employee training and has reduced travel costs by 50%.

Separately, Siemens Medical Solutions Services has been able to reduce the number of servers needed to deliver a clinical and financial application to 50 healthcare facilities by using CDN technology, says Michael Alban, strategic manager for SMS. In addition, network performance has improved by almost 10%.

SMS, a division of Siemens that provides applications to more than 1,000 healthcare providers, is using Cisco content network gear to offload demands on its Web servers and improve network performance. "Content networking is critical to our deployment of Web-based applications," Alban says.

But network-based applications are just one factor driving the adoption of enterprise CDNs. Experts say e-learning and other uses of streaming media are pushing companies to consider CDNs as a way to give their network a boost.

Many observers say corporations ultimately will use a hybrid CDN, where they install equipment behind their own firewalls and then link into a service provider to extend their global reach. Network service providers such as AT&T and Qwest Communications will make a bigger push into the CDN market in the next year, observers say. ■

### Grow your own?

**The pros and cons of building a private CDN:**

**Pros:**

- **Complete control:** Building a CDN yourself puts the reins in your hands; with a service provider you get what's available.
- **Security:** With a CDN behind your firewall, you have more security than if content is pushed out to a shared network.
- **Unlimited use of the system:** Once your own CDN is in there are no recurring fees to pay to a service provider.

**Cons:**

- **High upfront costs:** There is an initial investment to get a CDN up, something avoided by using a service provider.
- **Time investment:** Deploying your own CDN takes time; a service provider can get you up and running more quickly.
- **Reach:** An internal CDN will span your network, but you won't have the global reach you'd get with a service provider.

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# Cable net's demise raises new worries

■ **BY DENISE PAPPALARDO**

Broadband access services took another hit last week when Excite@Home pulled the plug on 850,000 AT&T Broadband cable customers. But analysts say that the pain of that failure on telecommuters and remote offices should be short-lived.

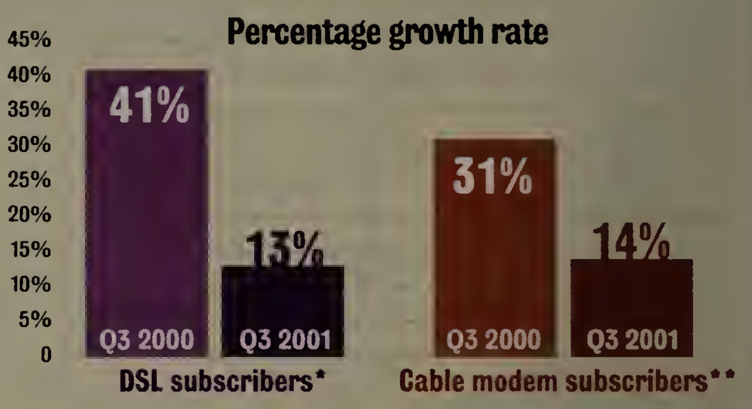
"There will be some initial impact on users, especially those on AT&T [Broadband's] network that lost service, but in six months most users won't still be feeling the effects," says Michael Paxton, cable analyst at Cahners In-Stat.

Excite's action last week was preceded by AT&T Broadband's decision to rescind its $307 million acquisition bid for Excite and the breaking off of negotiations between the two. Since then, AT&T Broadband has been migrating customers to a network it started building seven weeks ago, shortly after Excite filed for bankruptcy protection, according to a source close to AT&T.

Cox Communications and Comcast continued to negotiate with Excite last week, working out a deal that lets them pay $160 million each to use Excite's network until it is turned off in February. Cox and Comcast customers have not experienced outages. AT&T Broadband expected to have the majority of its customers back online by last Friday.

**Broadband subscriber growth rates to continue decline**

**While providers of cable modem and DSL services added hundreds of thousands of subscribers in the third quarter, there has been a slowdown in adoption rates for both services.**



*SBC, Verizon, BellSouth, Qwest, Covad

**Time Warner, AT&T Broadband, Comcast, Cox, Charter

SOURCE: ARS

But AT&T's move to walk away from the negotiating table, and the fact that Cox and Comcast still have network migration plans for early next year, could spark doubt in users' minds about staying with or moving to cable modem services.

"I'm going to start looking into DSL," says Brian Horsfall, a systems analyst in Des Moines, Iowa. "It's not as fast, and I'm not sure if it's as reliable, but e-mail has been a real problem" with Excite even before temporarily losing service, he says.

"It's a big mess, but there will only be a small percent of users that will move away from cable modem services altogether," Paxton says. "The majority of users still only have one broadband access choice in their neighborhood, so if they move off of cable they'd have to go back to dial-up."

And once users grow accustomed to broadband DSL or cable modem Internet access service, they typically don't want to go back to dial-up, he says. This is especially true of businesses that have users in small offices accessing a corporate network.

Despite the popularity of such services, users are not adopting them as quickly as they were a year ago. Market research firm ARS has noted slower growth rates for DSL and cable modem services this year.

"The current state of the economy coupled with broadband service prices that have gone up 10% to 11% since the beginning of the year have given potential customers reason to pause," says Mark Kersey, an ARS broadband industry analyst.

Users are also encountering fewer choices thanks to rash of bankruptcies by competitive local exchange carriers, he says.

Although Kersey expects to see a continued slowdown of broadband service adoption, he doesn't expect to see more rate increases. It wouldn't make sense for providers to raise prices at this point, he says.

Cable providers can lower their per-user expenses once they move customers to their own networks. Providers can expect monthly costs of $7 or $8 per subscriber compared with the $12 fees they paid Excite for the same network access, according to Thomas Weisel Partners.

AT&T, Cox and Comcast also have the task of reassuring business and residential users that cable modem service is a reliable high-speed option. AT&T fielded about 327,000 e-mail messages and almost a million phone calls from irritated customers, the company says. And thousands of other cable modem users are concerned they may be in the same boat down the road, Kersey says.

Cox and Comcast still have to build networks that will let each migrate customers off Excite's network and onto an infrastructure that each controls. Users have to question how smoothly such a transition will go and if Excite's network may be turned off before February 2002.

Cox has 575,000 cable modem users and Comcast has 800,000 still on Excite's network. Smaller cable providers such as Insight, Rogers and Mediacom have another 580,000 users still on Excite's network.

"More users will now ask their providers questions about their service, such as who supports your e-mail and Internet connectivity," says Christopher Whitely, project manager at Insight Research. "Customers may now feel more compelled to go with a company that controls all parts of their network."

*George Chidi Jr., a correspondent with IDG News Service's Boston bureau, contributed to this story.*

# Worm stymies e-mail systems

■ **BY JASON MESERVE**

Network and e-mail managers last week were once again warning users not to open unexpected attachments after a new worm wreaked havoc in enterprise e-mail systems and end-user PCs.

As of late last week, W32/Goner-A, or Goner, had infected 107,168 machines around the world since it began spreading early Tuesday morning, according to statistics from Trend Micro, ranking it as one of the largest infections of all time. However, quick-acting vendors that released patches and cleaning tools, and network managers who shut down infected systems, helped minimize the damage. New infected e-mails are still circulating, but the number was dwindling by Friday.

**Nasty infection**

**Trend Micro says there were**

**107,168**

**Goner infections over the first 2.5 days since the virus was reported, putting it in a class with LoveLetter, Code Red and Nimda as one of the top viral infections of all time.**

Goner came disguised as a Windows screen saver called "gone.scr," which was attached to an e-mail titled "Hi." When activated, the virus would send itself to everyone listed in a user's Outlook address book, attempt to delete any antivirus and personal firewall software installed on the infected machine, and create an mIRC — a popular Internet relay chat program — script for launching denial-of-service (DoS) attacks against other machines. By erasing any installed antivirus software, the virus' author hoped that their creation could remain undetected.

The virus was only moderately successful in deleting files and using mIRC to launch DoS attacks. "Virus writers generally are not good programmers and usually do not do quality assurance," says Joe Hartmann, Trend Micro's director of North American antivirus research.

"Viruses are getting back to being more malicious and trying to do damage to the infected system," says Keith Waldorf, CTO and co-founder of Captus Networks, which makes products for defending against DoS attacks. "Unfortunately with security, when something bad happens, it heightens awareness, then we go back to the old way and forget what happened six months or a year ago."

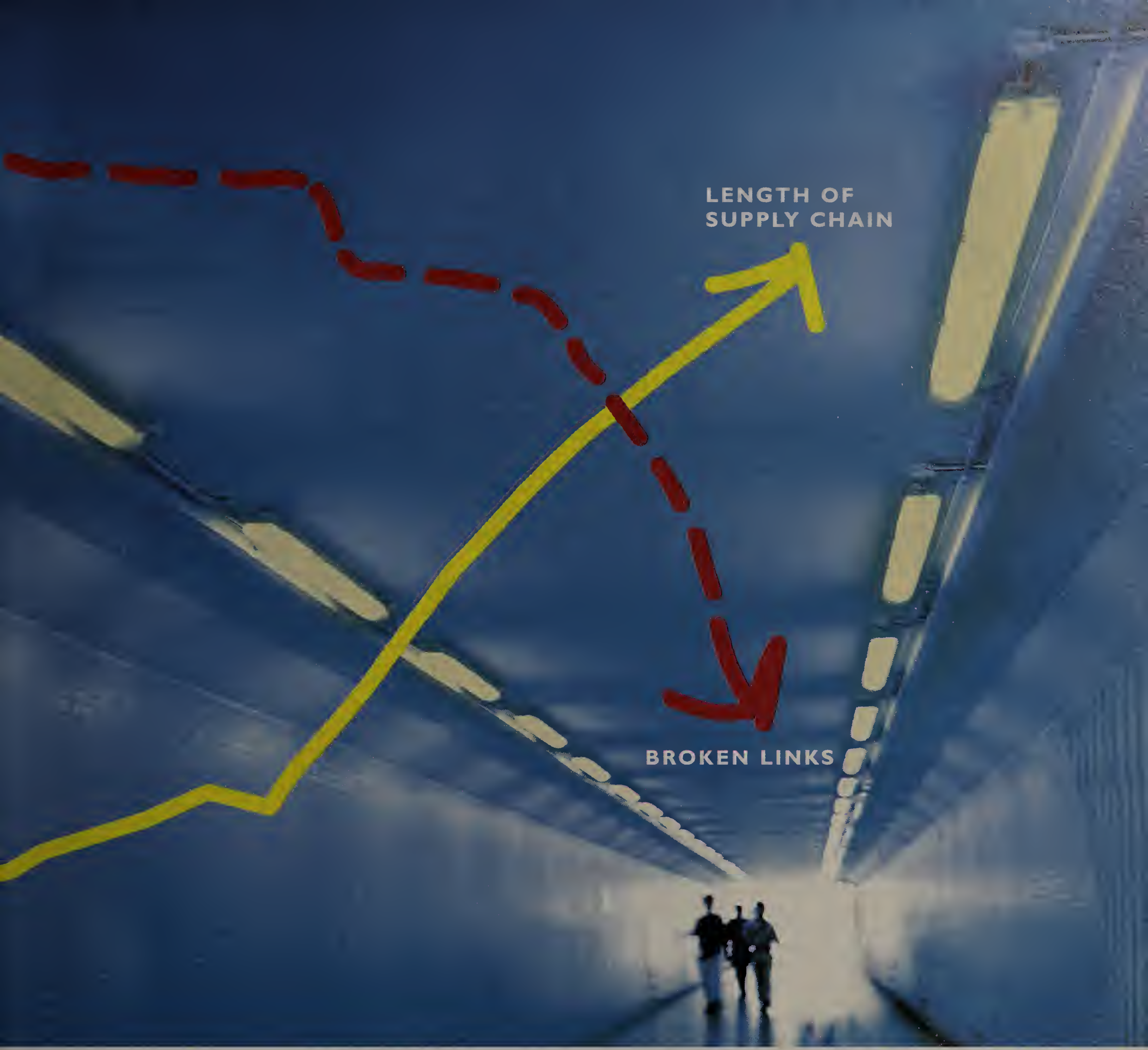
Why did corporations get hit again despite recent scraps with viruses such as LoveLetter? Social engineering, many antivirus researchers claim. The e-mail looked harmless because it most likely came from someone the recipients knew and looked like a standard Windows screen saver file. Also, most of the popular antivirus packages needed to be updated with new definition files before they could detect Goner. These files were not available until a few hours after the initial infection reports.

"Mostly my shock and dismay came from the fact that after all the [monthly] messages I've sent to my users to be cautious about attachments, about 10% decided to open it anyway," says Bill Sadlick, network manager at Charles Industries. "All the safeguards in the world can't stop us from hurting ourselves."

To prevent similar outbreaks, file attachments that are not business-related, such as those with .scr and .vbs extensions, should be blocked at the e-mail server or firewall. If antivirus software does not catch an initial viral outbreak, administrators can start blocking messages by subject line filtering, says Kevin Haley, group product manager for Symantec's Security Response division.

But even the best-laid plans could have holes.

"We were hit," says James Cumings, a system administrator at Kingsway America, which develops insurance software. "I am blocking .scr files on my firewall, but the associates who check their AOL, Hotmail or some other external mail account allowed this one to get through. Needless to say, I have a new e-mail policy in place." ■



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## JFK

continued from page 1

the IETF IPSec Working Group to choose which IKE replacement proposal will go forward within the next two to three months. Products based on the replacement will probably take a year to emerge, he says.

JFK may be the front-runner. It is written by a who's who of cryptographic experts, including AT&T Labs fellow Steve Bellovin, one of the IETF's leaders. IKEv2 was written by other security notables, including Dan Harkins, who helped write the original IKE. Sigma, which Leech describes as more of a minor variation of IKE, was written by respected cryptographer Hugo Krawczyk.

Both JFK and IKEv2 address the DoS vulnerability, and IKEv2 is better developed than JFK. But JFK takes a simpler approach, Leech says. "The thing that I find pleasing about JFK is that the document is only a few pages long," Leech says. "It's likely to be a much smaller specification than IKEv2. The core features of JFK are that it's small, simple and amenable to formal analysis."

But both proposals have merit, he says. "IKEv2 is an implementation that preserves where possible the [features] of IKE . . . so vendors can tweak their existing IKE implementations until they're IKEv2-compatible," Leech says. "JFK is so simple that a vendor could do an implementation fairly quickly."

> **"Frankly my biggest concern about IKE is the lingering fear that it's got a security hole in it. The more complex things are, the more likely they are to have undetected holes."**
>
> **Steve Bellovin**
> Fellow, AT&T Labs

In the meantime, IKE's theoretical vulnerabilities have never been exploited, but remain a worry to some. "Frankly my biggest concern about IKE is the lingering fear that it's got a security hole in it. The more complex things are, the more likely they are to have undetected holes," Bellovin says.

In writing the JFK proposal, Bellovin says he and his collaborators tried to make it as simple as possible and to resist DoS attacks as strongly as possible. In exchange for DoS protection, JFK trades off the strength of a technique called perfect forward secrecy, a way of making sure that compromising one encryption key cannot lead to cracking others.

IKE's complexity stems from the fact that it does so much. It is the designated protocol specified for key management in the IPSec standard for VPNs. IKE authenticates the devices at either end of VPN tunnels, decides on the encryption and authentication algorithms that will be used in a session, and generates and manages encryption keys.

Alternatives to IKE simplify the protocol in many ways, some of them significantly reducing the back-and-forth between devices as they set up the secure link. With IKE there are eight possible exchanges to complete the first phase of negotiations. That would be replaced by a single exchange under IKEv2.

In some cases, IKE offers multiple options for accomplishing these tasks and some of them rarely get used. IKE specifies four means of authentication. "Preshared key is used a lot and so are public-key signatures, and then there are these other two public-key encryption modes. I don't know of anybody that implemented one, and I know of one vendor that deployed the other as part of their product line," Harkins says.

With so many parameters involved, configuring IKE invites mental errors. "With complex things you tend to make a mistake, and a mistake in a security protocol can be catastrophic," Harkins says.

A simpler replacement for IKE will also result in safer VPNs, says Paul Hoffman, director of the VPN Consortium, an alliance of VPN vendors, and a *Network World* columnist. "When people are trying to analyze the security of their particular VPN, there are fewer options for them to have to analyze. That's a big thing," he says.

Whatever replacement is chosen, current users of VPN gear should face an easy software-only upgrade, Enterasys' West says, and will continue to be able to use their management systems.

"Products will have the same look and feel whether they are configuring IKEv1 or IKEv2. The user shouldn't know," Harkins says. ■

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### Before and after IKE

**The Internet Key Exchange (IKE) for encryption key management is regarded as too complex, so the IETF is considering ways to streamline it.**

| Present IKE features | Proposed IKE replacement features |
|---|---|
| Allow use of keys that are shared ahead of time. | Eliminate support for pre-shared keys. |
| Allow authentication via digital signatures, electronic tokens and RADIUS servers. | Allow authentication by digital signature only. |
| Are prone to getting out of sync due to network delay. | Build in resynchronization procedure. |

# New Tonic for Web mgmt.

■ **BY DENISE DUBIE**

AUSTIN, TEXAS — Start-up Tonic Software next week will update its Web application performance-management software that users say lets them guarantee better site availability and service delivery.

With the release of Tonic 2.0, the company added a cluster feature, which culls the data collected from disparate databases into one location for network managers. Also new is a reporting portal that allows users to view data from anywhere with a Web browser. Tonic also included an automation engine that uses predefined scripts to determine when to take automated corrective action.

The company says Tonic can monitor performance servers and back-end legacy systems, and can pinpoint the source of a problem.

Calvin Do, IT director at Electronics for Imaging (EFI) in Foster City, Calif., has been using Tonic software for about a year to test and monitor application performance on the company's extranets for customers and suppliers; its intranet; and the corporate Web site. Do says EFI has saved the cost of one or two staff positions by deploying Tonic.

"By not needing to staff folks to monitor if the portal is up and performing well, Tonic allows us to continue to provide 24-7 service to customers and suppliers without spending more money, which is critical to us right now," Do says. EFI uses Tonic to simulate custom Web services and determine how the network should respond. The software will ensure that predefined performance metrics are met. Do programmed the software to page the appropriate person when a problem occurs, but Tonic officials say it can also take automated actions.

The Tonic software sits on a Microsoft Windows server on a network and generates simulated Web transactions to monitor and measure the response of databases, application and Web servers, and legacy network elements.

When installing the software, network managers need to write scripts that will instruct it to perform automated corrective action. Available now, pricing for Tonic 2.0 starts at around $43,000 for a departmental deployment. Enterprise implementations can cost more than $1 million. ■

# Lucent pitches antihacker tool for DNS

■ **BY KATHLEEN OHLSON**

MURRAY HILL, N.J. — Telecommunications equipment giant Lucent last week introduced a new tool it says will help companies protect their DNS infrastructure from hackers.

DNS ProPerformance, available now, scans a company's DNS infrastructure for security vulnerabilities, notifying administrators of inaccurate or invalid DNS information that would render a site or application inaccessible.

Lucent says ProPerformance conducts more than 70 tests to ensure the DNS infrastructure is operating without glitches, and administrators can specify how often they want the tests to run. The tool sends e-mail notifications to administrators with the results every time a test is performed.

"Companies don't realize how important it is not to have errors" in their DNS servers, which translate domain names to IP addresses in numeric form, says Cricket Liu, author of O'Reilly & Associates Nutshell Handbook *DNS and BIND* and vice president of research and development at Men & Mice, a Reykjavik, Iceland, company that develops DNS software. "It's easy to make a minor mistake that has bigger consequences" such as accidentally cutting off access to e-mail or a company's Web site, she says.

ProPerformance competes with Cisco's Network Registrar, Nortel's Optivity NetID and Check Point Software's Meta IP. The tool will be part of Lucent's push to boost its presence in network security management software.

"Software is not what Lucent's known for, but to still have the business unit [Navis] around and make an investment," into network security management software indicates Lucent sees this as an opportunity, says Paul Bugala, an analyst at IDC. ■

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SPECIAL REPORT: THE HP/COMPAQ MERGER

# The search for acceptance continues

**BY APRIL JACOBS**

The new Hewlett-Packard envisioned by CEO Carly Fiorina could be a technology powerhouse, infused with the resources to combat rivals IBM and Sun and drive standards-based computing for the enterprise through innovation and expertise. Then again, the company could flop, like many large mergers have in the past — Compaq still has a bad taste in its mouth from a largely failed buy of Digital Equipment a few years ago.

Since announcing that HP would merge with Compaq early in September, Fiorina and Compaq CEO Michael Capellas have watched the deal get battered from all sides — Wall Street, the press, customers and even some members of the Hewlett and Packard families.

*Network World* and other IDG editors spoke with Capellas and Fiorina about the merger at a recent Gartner Group Symposium. Here's a look at assertions made during that interview and the reactions of industry experts.

**Fiorina and Capellas say that despite initial negative reaction from observers, HP and Compaq customers view the merger as a win.**

It is true some users appear willing to give Fiorina and HP time to explain just what the merger is about. Problems may arise, though, when HP has to make tough decisions about which products live and die.

"Carly Fiorina has a big job ahead of her, but I think she can do it," says Steve Vollmer, director of IS at the Venetian Resort Hotel and Casino in Las Vegas. Vollmer says he isn't worried about HP discontinuing core products and plans to stick with the HP network products he has. The Venetian also has 1,000 HP desktops.

Others aren't as charitable. Dave Anderson, a senior systems engineer at Verizon, worries that the merger may end up "dumbing down" HP's technology development.

"It seems like they may be heading down the road to become a PC company," he says. Verizon has several hundred HP e3000 servers running the MPE operating system — a product line HP recently announced it would phase out over the next five years. Of the merger, Anderson says, "I view it as a big loss."

**Fiorina and Capellas say they are committed to creating a company focused on industry-standard hardware and software. As separate companies, they say they have laid out the most specific migration strategies to 64-bit systems in the business, with their mutual support of Itanium.**

While HP and Compaq are not the only companies committed to Intel's 64-bit Itanium processor family, they may have the clearest roadmap, experts say. Mark Melenovsky, an analyst with IDC, points out that rival Dell is in a very different position because it doesn't have a RISC processor family to transition from. IBM, on the other hand, has its Power series, while Sun has UltraSPARC. "I'm sure Sun and IBM are looking to transition, but they have a huge installed base to think about," Melenovsky says. "As far as Itanium is concerned, only HP and Compaq have been aggressive."

JIM SULLEY/WIREPIX

CEOs Carly Fiorina of Hewlett-Packard and Michael Capellas of Compaq insist that despite opposition to their companies' merger, customers will win.

**Fiorina and Capellas say that despite concern that overlapping server technology between HP and Compaq could leave some customers out in the cold, the companies are more complementary in this arena than competitors.**

Observers we asked say the companies have products in three out of four important areas — high-end scientific computing, high-end corporate computing, midrange offerings and entry-level boxes.

Compaq is much stronger at the low end with its Intel-based boxes. HP is stronger in the midrange with its Unix offerings, and Compaq has Himalaya in the fault-tolerant arena. HP also has its high-end server, Superdome, as an answer to high-end systems from IBM, Sun and Compaq. Each also has strengths in different vertical markets, Melenovsky says, noting that HP is stronger in the government markets, while Compaq is stronger in midsize businesses and corporations, as well as the Internet data center.

**Capellas and Fiorina are taking steps to avoid the fallout that plagued Compaq after it bought Digital Equipment. Users grew frustrated when Compaq took too long to deliver new products and a clear strategy.**
**Fiorina and Capellas say they will avoid disrupting customers by giving them a clear picture of a new account team structure and contacts; detail a unified product roadmap immediately; and announce the executive team in advance.**

Observers say that with the economy in a tailspin, HP has little wiggle room in giving customers and investors a clear roadmap for the future. In an opinion written by IDC, the research firm said HP will have to execute its plan swiftly, overcome government legislative hurdles (the Securities and Exchange Commission has requested more information from HP, slowing the process), and expand on what IDC says is a portfolio of products with many overlapping areas.

**Fiorina and Capellas say that when merged HP/Compaq will focus on bringing innovative products quickly to market.**

Gartner, at least, drew some conclusions contrary to this assertion. A research note issued by the company after the merger announcement analyzed several key areas: "Both HP and Compaq depend on tactical partnerships with outside vendors to meet their customers' software infrastructure requirements," Gartner concluded. What Gartner suggests HP may need to do is spin off some of its businesses and give them plenty of research and development funding. One such spinoff might combine HP's wireless and mobile software business with Compaq's consumer electronics units to create consumer offerings, network appliances and advanced printing options.

Gartner also says HP and Compaq don't have a strong track record in the software infrastructure arena, contrary to Fiorina's assertion that the new HP will set the standard for innovation; and that HP will have to spin off its software businesses to take any kind of lead in the software arena, be it with HP-UX, or OpenView. HP has stiff competition in the network management software business with IBM/Tivoli and Computer Associates being the leaders, Gartner says.

**Fiorina and Capellas say the deal is great for Compaq shareholders.**

Defining what is good or bad appears to come down to the type of looking glass you own. The basics of the deal are that Compaq shareholders will get .6325 of a new HP share for each share of Compaq they hold when the deal is completed. The why comes down to exchange ratios. The new company will be worth $87 billion, with the actual merger deal weighing in somewhere between $19 billion and $25 billion, market fluctuations taken into consideration. The bottom line is that if the new HP fares better than the old Compaq, Compaq stockholders stand to make money. If it doesn't, then investors on both ends will lose. ■

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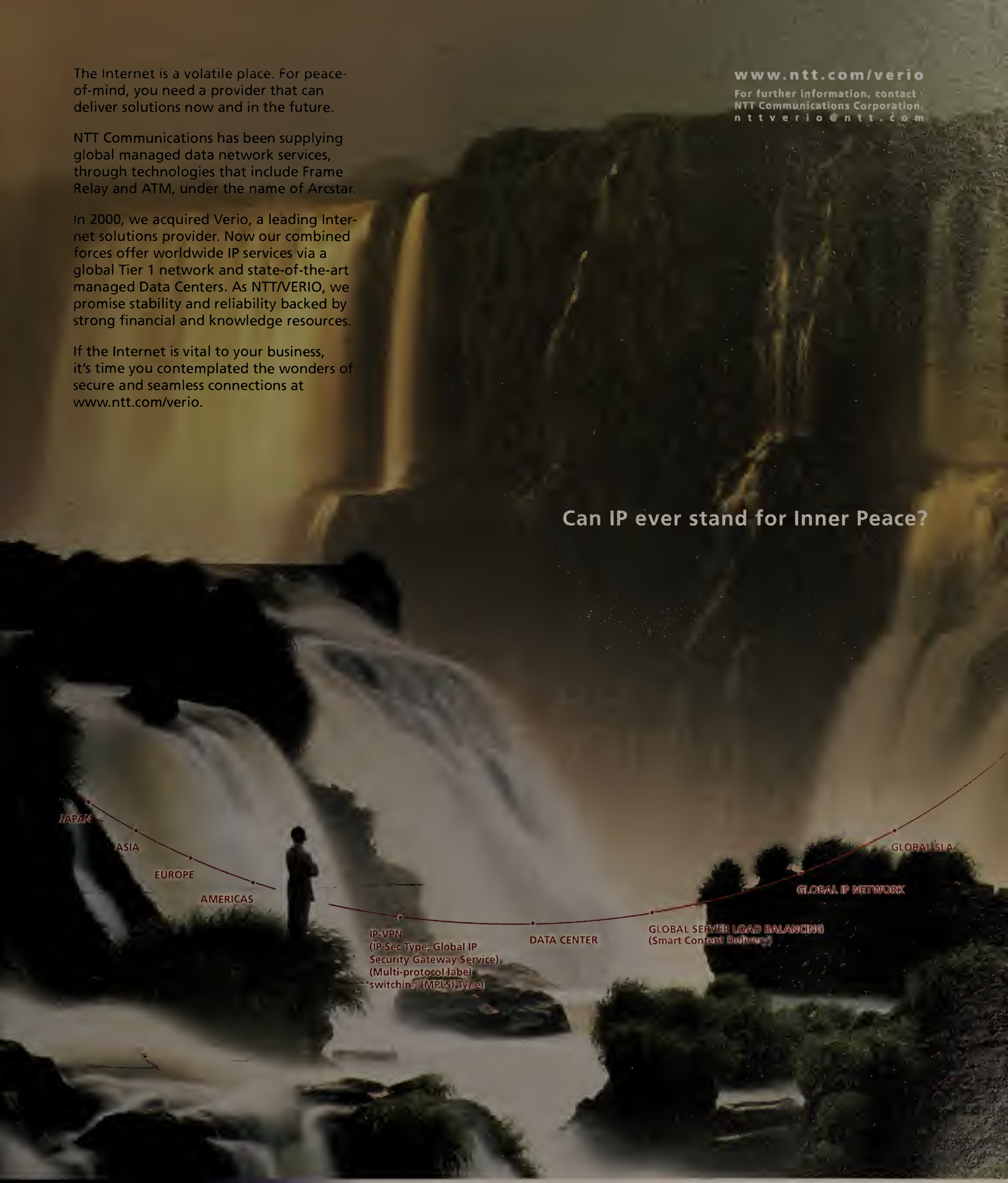
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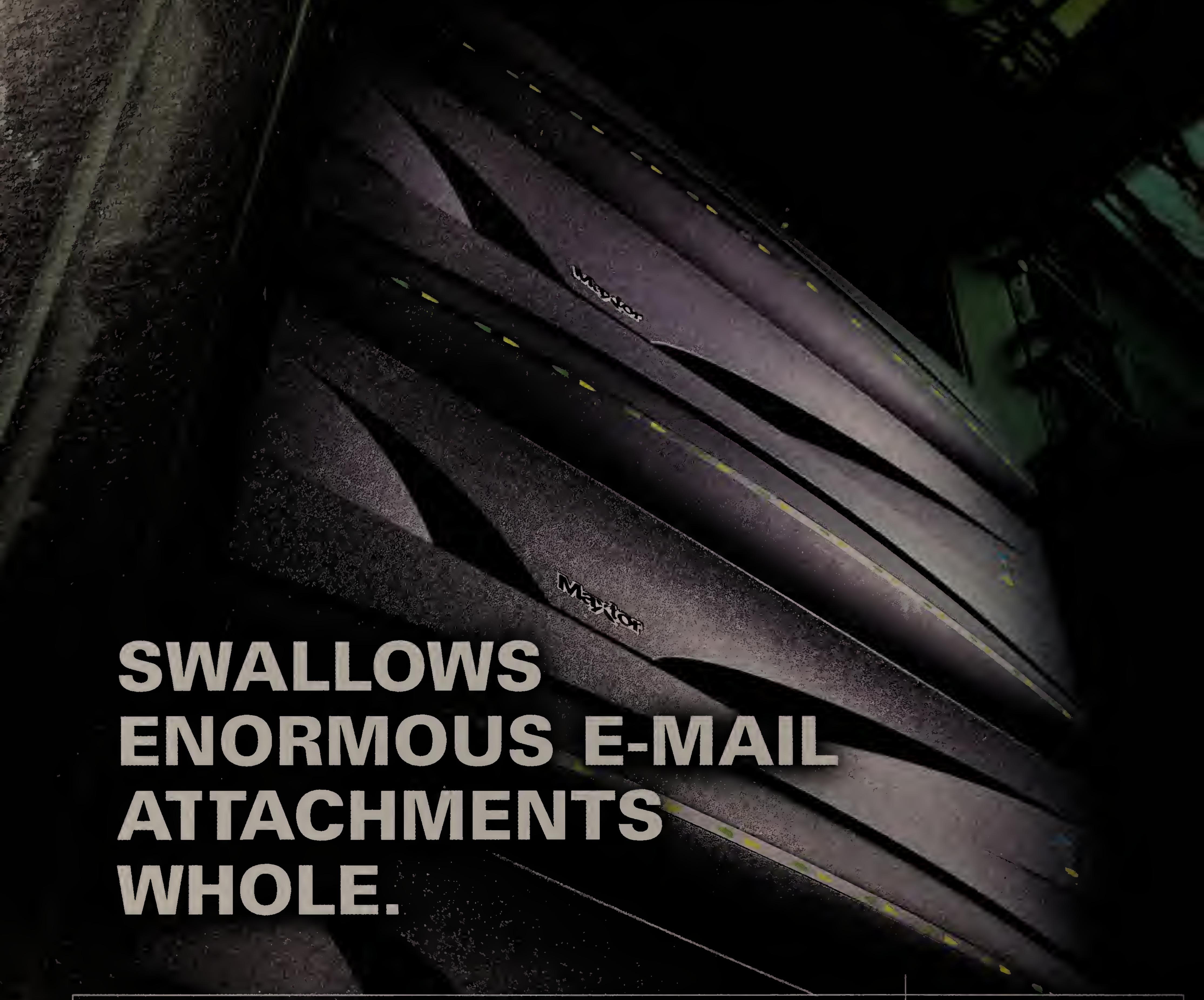

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# Infrastructure

- TCP/IP, LAN/WAN SWITCHES
- ROUTERS ■ HUBS
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- SERVERS ■ OPERATING SYSTEMS
- VPNS ■ NETWORKED STORAGE

## Short Takes

■ **Hewlett-Packard** has launched a suite of blade servers that can be specialized for tasks such as Web hosting and media streaming, or management of other servers, depending on hardware design or the software installed. Blade systems are complete servers on a single circuit board, several of which can be inserted into a compact chassis sharing a single bus and power supply to offer the maximum number of servers in a small space. Blade servers also consolidate cabling over a common backplane. The first model, the **bc1100**, will ship in January and is built around a 700-MHz Intel Pentium III processor with 512M bytes of error checking and correcting memory and a 30G-byte hard disk. Options include Red Hat, SuSE Linux AG or Debian Linux installed on the blade. The basic blade will sell for $1,925. HP's blades are designed to plug into an industry-standard CompactPCI bus, and 38 fit in a 13U-high (22.75-inch) chassis. Other operating systems and processor configurations will come later: A model with Microsoft Windows preinstalled will be available by March. www.hp.com

■ **Digital Fountain** this week will announce two appliances it says will help customers efficiently deliver large blocks of data over WANs. The Transporter Fountain devices will let users send content to departments, users or other servers on the Internet on a scheduled basis. They sit on a network between a network-attached storage device and WAN connection. The products will come in two models: **Transporter Fountain 1000** is a 1U-high appliance that has 5G bytes of storage and supports content delivery rates up to 10M bit/sec. **Transporter Fountain 3000** is for distributing large amounts of data. It is a 3U-high rack appliance that includes 85G bytes of storage and supports content-delivery rates up to 70M bit/sec. Both models will be available this month starting at $75,000. www.digitalfountain.com

# EMC 'Net App killer' short of goal

### Storage giant makes inroads, but rival still has a few things up its sleeve.

■ **BY DENI CONNOR**

HOPKINTON, MASS. — The introduction of EMC's midrange storage box a year ago may have boosted the storage giant's market share and revenue over its rival Network Appliance, but it doesn't appear to be the "Network Appliance killer" the company and industry experts claimed it would be.

Introduced with much fanfare in December 2001, the EMC Clariion IP4700 is a fault-tolerant device aimed at customers who had been flocking to high-flying Network Appliance for its fast, relatively inexpensive storage appliances. Like the 4.5-terabyte Network Appliance F840 appliance and two-node F840 cluster, EMC's Clariion is used for file and print services, possibly replacing NetWare or Windows NT servers.

While EMC indeed took market share away from Network Appliance and exceeded the company in network-attached storage revenue in 2001, sales of the IP4700 accounted for only 10% of EMC's NAS revenue, market research firm IDC says. EMC and Network Appliance command a 75% share of the market over products from vendors such as Quantum and Maxtor.

IDC projects EMC will have $777.2 million in NAS revenue in 2001 compared with $597.9 million for Network Appliance, resulting in a 42.3% market share compared with 32.5%. However, for unit shipments, Network Appliance shipped more than 6,800 file servers compared with 1,520 for EMC. Network Appliance also shipped two times more terabytes of storage to customers than EMC.

"Clearly, EMC came from behind and has been very aggressive about it," says James Gruener, an analyst with The Yankee Group. "I wouldn't count Network Appliance out, however. They still have a significant installed base to draw on."

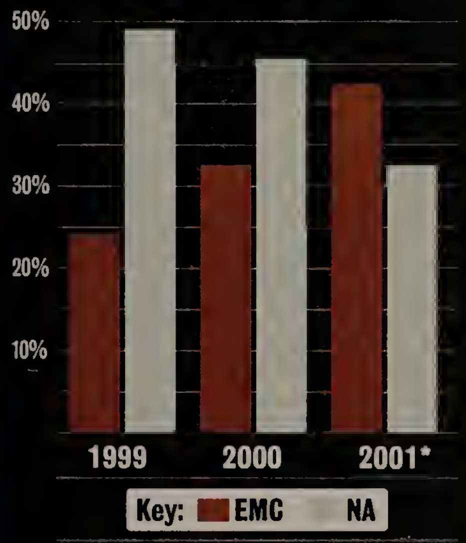
The bulk of EMC's NAS revenue was from its Celerra file server, which attaches to a block-oriented EMC Symmetrix array and uses the Symmetrix's disk for storing files. Celerra is sold to high-end enterprise

See EMC, page 20

**NAS market shifts**

**An IDC study projects that EMC eventually will take the lead over Network Appliance in both revenue and market share.**

**Worldwide disk storage systems NAS revenue:**



SOURCE: IDC *Based on Q4 projection

# Cisco unleashes wiring closet gear

■ **BY PHIL HOCHMUTH**

SAN JOSE — Cisco last week lobbed a volley at its rivals in the desktop switching arena with a slew of stackable boxes.

The new products are aimed at helping customers enforce network access and allocate bandwidth at the port level, making networks more secure and manageable while offering options to use Gigabit Ethernet where needed.

The company says the six new stackable switches offer more Gigabit Ethernet port options than previous Catalyst 3550 and 2950 products, and include improved security and management features.

New modules for the Catalyst 4000 modular switch and the Cisco 2600 and 3600 routers were also introduced. The blades could help customers deploy Gigabit to the desktop, or combine switching and routing into a single box in remote offices.

The new stackable Catalysts include the Catalyst 3550-48 and the 3550-24, which offer 48 and 24 ports of 10/100M bit/sec Ethernet, respectively, with two Gigabit Interface Converter (GBIC) slots for adding 1000M bit/sec uplinks. The Catalyst 3550-12G is a 12-GBIC port switch, which can be outfitted with a variety of fiber-optic or copper Gigabit Ethernet GBIC modules.

The 24- and 48-port models are for use in wiring closets where end-user security and finely tuned bandwidth management are needed, while the 12-port GBIC switch is targeted as a backbone switch for a small network, or as a data center switch for connecting enterprise servers or Web servers.

The 3500 switches support full Layer 3 and 4 IP routing, but a software add-on is required to activate it. The products support features such as IP-based access control lists (ACL), which can limit the type of traffic that can pass through a port. A rate limiting feature controls how much bandwidth end users can receive.

The three new Catalyst 2950G models — also in 12-, 24- and 48-port versions — are aimed at wiring closets in which full Layer 3 routing is not needed. Software can be added to the switches for supporting Layer 3 and Layer 4 "services," such as the ability to inspect packets at Layers 3 and 4 for scaled-down ACL security (meaning fewer ACL-based rules can be applied).

The Catalyst 2950G-48 is being tested at Webster University in St. Louis, where it will be used as a wiring closet switch in computer labs and administrative offices.

The ability for a Layer 2 switch to support IP-based Layer 3 ACL rules at the port level could help the IT department at the 18,000-student university better manage how the network is accessed, says Ben Hockenhull, a network coordinator at the school.

"With this, we can limit some

See Cisco, page 20

**TOLLY ON TECHNOLOGY**

Kevin Tolly

# Thin client's management gap

No matter how good the product or how careful the implementation, there are times when a network management graphical user interface can't drill deep enough, and we have to turn to the guru with the network analyzer to help ferret out a problem. The guru, in turn, counts on top notch "decode" software to let him "read" the network traffic. Except, of course, if that traffic happens to be from thin-client sessions.

As part of The Tolly Group's ongoing research in thin-client technology, we recently turned our attention to thin-client decodes. Specifically, we wanted to understand the level of visibility that leading protocol analyzers give into the two major thin-client protocols — Citrix Independent Computing Architecture (ICA) and Microsoft Remote Desktop Protocol (RDP).

We captured both types of traffic using several network analysis products and loaded those traces into their respective protocol analysis engines to see how much of the thin-client protocol "innards" they would reveal. I can sum up our research results for thin-client decode support on popular test tools in just three words: There isn't any.

Neither Agilent's Software Advisor V11.2, Sniffer Technologies Sniffer Pro 3.50.02 nor the Acterna DominoFE Internetworking Analyzer 3.0 could see anything. To all of the above, the ICA/RDP data was just unidentifiable TCP data.

To put this in perspective, when one captures, say, the traffic flow of a Windows 2000 client entering a network and accessing resources virtually EVERY analyzer vendor will decode Microsoft's SMB protocol that rides on top of TCP. Thus, one can "read" the station's actions as it adds its name to the domain.

And, problems can be isolated when, for example, we see a client sending a legitimate query but receiving no response from a server.

We queried a few other analyzer vendors about their support for RDP/ICA — namely Network Instruments and WildPackets Networks. Network Instruments came back to tell us that, in fact, the company DOES support RDP.

Alas, when we tested this, we determined that all they do is identify the TCP port as belonging to T.120 (from which RDP is derived) and nothing more. Sorry, that doesn't count as a protocol decode in my book.

So what does this mean for network managers? It means, simply, that they have no tools at all when attempting to debug problems or tune performance by observing and understanding the traffic flows in their thin-client networks. They are flying blind.

Citrix and Microsoft, though, are more to blame than the analyzer vendors. The two companies have held protocol details very close to the vest.

It was only last month that Microsoft announced it would license the RDP protocol to just about anyone — and for free. Citrix would do well to follow suit.

Both companies should reach out to the major network management vendors and encourage them to integrate high-quality thin-client decodes into their products. And, for their part, customers should call for management vendors to do the same.

There's no reason for such secrecy and certainly no valid reason for keeping customers in the dark.

*Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com or www.tolly.com.*

## Cisco

continued from page 19

machines, such as Web kiosks, to Web access only," based on the port they're plugged into, Hockenhull says. "If someone tries to plug something else into one of those ports, like a laptop, they'd still only get Web access."

Hockenhull also says he's been able to use Layer 3 ACLs on the box without any speed degradation during some informal testing.

Cisco's Cluster Manager software for administering stackable and modular switches has also been upgraded with new "wizard" configuration tools, which can help ease the setup of LAN and WAN parameters, such as security and quality-of-service policies, Cisco says.

The new stackable switches will compete closely with recently released products such as 3Com's SuperStack III Switch 4400 series and Foundry Networks' FastIron II — which also offer wizard-driven configuration, rate limiting and port-level security. Cisco's stackable Catalysts are priced between products from Foundry and 3Com — around $1,500 less than the former, and more than the latter.

Cisco's new 48-port 10/100/1000M bit/sec Ethernet module for the Catalyst 4000 is aimed at large enterprise wiring closets that are looking to migrate some desktops to Gigabit Ethernet, while keeping other users plugged into the same switch at 10/100.

For branch offices, Cisco released the 16-port 10/100 EtherSwitch Network Module for its 2600 and 3600 routers. The module, which fits in one network module slot of a 2600/3600 router, can be used to combine switching and routing into a single box for a small office or enterprise branch office. The module also supports Cisco's in-line power over Ethernet technology, letting a Cisco router power devices such as Cisco IP phones or wireless LAN network access points (Cisco's in-line power technology is only certified to work with Cisco phones and access points).

All products will be available this month. (See graphic for pricing.) ■

### Gigabit on tap

**Several of Cisco's new switches and modules are aimed at small and midsize nets.**

**Stand-alone switches**

| Product | Price |
|---|---|
| Catalyst 3550-48 | $ 5,800* |
| Catalyst 3550-24 | $ 3,500* |
| Catalyst 3550-12G | $10,000* |
| Catalyst 2950G-48 | $ 5,000 |
| Catalyst 2950G-24 | $ 3,000 |
| Catalyst 2950G-12 | $ 2,500 |

*Layer 3/4 upgrade available for $2,000

| Modules | Price |
|---|---|
| Catalyst 4000 48-port 10/100/1000Base-T line card | $10,000 |
| Cisco 2600 and 3600 router EtherSwitch network module | $ 1,800 |

## EMC

continued from page 19

environments, analysts say. The same experts say that Network Appliance's revenue consists entirely of servers that contain file-oriented storage that are sold to enterprise workgroups and departments.

"Those numbers are due to the combination of a number of things," says Jim Rothnie, CTO at EMC. "It's due partly to the introduction of the IP4700, but it's also due to the [sales of] our Celerra product. The market for NAS products during 2001 really moved into enterprise-scale operations, which is where Celerra is focused."

John Gentry, director of sales engineering for storage service provider Accellion in San Jose, has IP4700s and EMC Celerra NAS devices in his enterprise. "If I need to support regional sales offices in different locations, the IP4700 is a great solution for that. I can deploy it out there easily, move files to it and local people can back up to it. It's great as an isolated island of storage," he says.

Gentry says that he could use the Celerra in these offices, but he would be incurring a lot more expense than necessary attaching a Symmetrix. "The Celerra is an easy way to access storage and have high-end phone home support and back-end synchronization capabilities, but its not for the remote office."

EMC is expected to pick up additional sales next year for the Clariion IP4700 as the result of a recent agreement with Dell to sell the device to its midrange NAS customers, analysts say. Deutsche Banc Alex. Brown, an investment bank in New York, projects $200 million to $300 million in revenue in 2002 increasing to $500 million in 2003 from this deal.

Network Appliance isn't complacent about the market share it is giving up to EMC. Nor is the company resting on its laurels in NAS storage. In the first half of 2002, the company, which is one-fifth the size of EMC by revenue, will introduce a scalable file server that can transport block-oriented storage over IP using the iSCSI technology, thus alleviating the necessity for companies to install separate storage-area networks. Network Appliance says it already is shipping a block-oriented device called SNAPManager for Exchange 2000.

This week, Network Appliance will also introduce a NAS device called NearStore for online data retention that uses inexpensive Integrated Drive Electronics (IDE) drives and scales from 12 terabytes to more than 100 terabytes. It will cost 2 cents per megabyte. The company is also trying to coax customers of Network Appliance 880s or 840s with an enterprise-type offer — it will ensure uptime availability with financial penalties that could amount to up to a year of free service.

"At the end of the day, customers are looking at a lot of factors that include market share and price," Gruener says. "However, they are also looking at things like support, management and service-level management. Market share is going to be a challenge for everyone next year because customers are going to be searching for the ultimate solution for their money." ■

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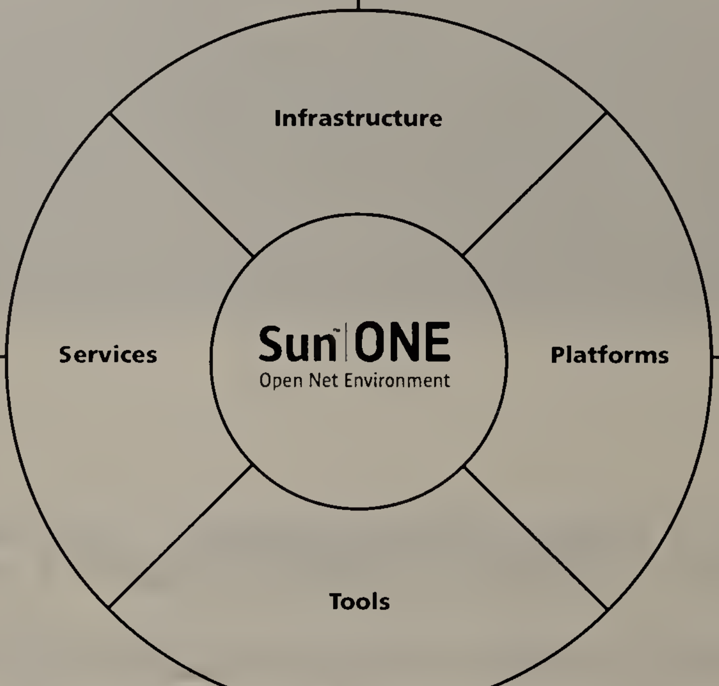

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- DIRECTORIES

## Short Takes

■ **Symantec** and **TruSecure** last week said they would team to boost customer security. The companies will recommend and resell each other's services. TruSecure offers a service that assesses companies' network and computer security, recommends steps to shore up security and provides customers with a list of practices leading to greater overall security. TruSecure will also add Symantec's **NetRecon** vulnerability assessment tool to the suite of products it uses when evaluating customers' security. www.trusecure.com, www.symantec.com

■ **Ximian,** a maker of open source desktop software, last week said it plans to sell software that will let users of its **Linux** applications connect to **Microsoft Exchange 2000.** Ximian has developed software called **Ximian Connector for Microsoft Exchange,** which is due next month and will let Ximian Evolution users plug their Linux computer into a corporate network running an Exchange server. Ximian Evolution is available as a free download for users of the company's software management client Red Carpet, or on a CD as part of its Ximian Desktop suite. That package is available in a Standard Edition for $30 or Professional Edition for $50. Ximian Connector will be available in July for $70 per seat. Ximian's products run on Red Hat, MandrakeSoft, SuSE, Turbolinux and Sun's Solaris operating system. www.ximian.com

■ Looking to help small businesses fight the rising tide of viruses and worms spread by e-mail and the Internet, **McAfee** last week announced the **WebShield e250** antivirus appliance. The WebShield e250 is placed at the customer's gateway and scans protocols such as HTTP, Simple Mail Transfer Protocol and Post Office Protocol 3 for viruses, the company said. For networks of up to 500 users, the device scans all incoming and outgoing traffic and can check between 50,000 and 60,000 messages per hour, McAfee says. www.mcafeeb2b.com

## Q&A

# IBM's Patrick talks up e-business and Web services

*John Patrick, vice president of Internet technology, is one of the driving forces behind Big Blue's Linux and e-business push. He has also been instrumental in helping build IBM's alphaWorks Web site, the company's online research and development laboratory. Patrick, who's worked for IBM for more than 30 years, is an industry luminary and is the author of "Net Attitude," a book about making companies Web-savvy.* Network World *Senior Writer Kathleen Ohlson recently caught up with Patrick to talk about emerging technologies, Web services and security.*

**What areas in e-business software and customer issues will IBM be focusing on next year?**

The big thing is integration: the plumbing, and it's not glamorous. You've got the slick Web pages for consumers and businesses as well as reliable, good performance and all that. Where you'll get the savings and efficiency is all that stuff in the background.

Integration is a powerful idea in and out of the enterprise — it allows incompatible systems to talk to each other. At times when you order something, especially promotional items, you're told to allow eight to 12 weeks for shipping. Why? It's likely sitting on a shelf somewhere waiting to go. It's because incompatible systems were involved.

When [companies] re-engineer business processes, they quickly realize integration is going to take a long time. Their competition isn't going to give them any breathing room, so they have to find a way to enable incompatible applications and systems to communicate with each other.

**What about research and development?**

We have a broad research program, we've invested multibillions of dollars over the years ... and we're investing [more money] every year in areas [such as pervasive computing and mining unstructured data].

Autonomic computing is the idea of the computer system

See Q&A, page 26

# Start-up extends wireless net mgmt.

■ **BY DENISE DUBIE**

### PROFILE: MFORMATION TECHNOLOGIES

| | |
|---|---|
| **Location:** | Edison, N.J. |
| **Founded:** | September 1999 |
| **Product:** | Wireless device management software |
| **Management:** | Ron Pettengill, CEO; Upal Basu, co-founder & vice president of corporate development; and Rakesh Kushwaha, co-founder and CTO. |
| **Financing:** | $15.5 million; investors include Battery Ventures, North Bridge Venture Partners, Deutsche Banc, Kingdon Capital. |
| **Customer:** | Pfizer |
| **Competitors:** | Mobile Automation, Callisto (now part of Novell) and Xcellenet. |
| **Fun fact:** | Instead of a start-up in a garage, mFormation operated out of a Hilton hotel for its first year, with amenities such as room service, a gym and a jazz bar (employees had to pay for these extras). |

EDISON, N.J. — Start-up mFormation Technologies last week launched software it says will let customers manage wireless devices as though they were connected to a LAN.

The software, mFormation Enterprise Manager, lets network executives monitor performance, response times, availability and overall status on wireless devices — without requiring users to sync up with the network through a device cradle, the company says. Wireless users often must wait to receive software upgrades, virus alerts or application rollouts until their device can be connected to the corporate network, usually via a cradle that taps into their desktop PC.

Enterprise Manager server software can be installed within a corporate firewall on Sun Solaris or Microsoft Windows NT boxes. Agents are installed on every wireless device to be managed. Agents can also be installed on application and Web and database servers to determine what within the network could be causing performance problems.

The server software can be set to automatically poll the agent at predefined intervals, and customers can manually poll the device if a user reports a performance problem. Also, the agent watches for changes in predefined performance metrics, and if a change is detected, the agent

See MFormation, page 26

# Real-time collaboration with a twist

**■ BY JOHN FONTANA**

HOUSTON — Start-up Advanced Reality this week will introduce software that plugs into corporate applications and provides real-time collaboration without the need to alter existing user interfaces.

While interest in real-time collaboration is catching on, it often involves the use of specific applications. Enterprise customers would prefer to collaborate from within established corporate applications, in this case Microsoft Excel, to avoid the cost of training and purchasing new applications.

Experts call this "contextual" collaboration, where users can access collaboration features from within standard software.

Advanced Reality is trying to meet that need with Presence-AR, a Java-based application that embeds within applications and lets users share data in real time over a peer-to-peer connection. The trick is adapting the data for presentation within any interface, rather than creating a separate collaboration environment with a common data format.

"This software doesn't require users to learn a new application environment. It doesn't try to change the application architecture," says Tyler McDaniel, an analyst with Hurwitz Group. "It gives users new options from within applications they already use."

But McDaniel says that Advanced Reality still must define concrete enterprise examples for use of the software. Also, the company has yet to create any adapters beyond Microsoft Excel, but plans to release a software development kit next year.

The company doesn't plan to release a stable of standard adapters, but will custom develop them as part of corporate projects.

The software uses a patent-pending technology that maps data between applications and frees it from a specific operating system, application or user interface.

For example, Presence-AR allows an Excel user to share and edit spreadsheet data with a user running Lotus 1-2-3. The spreadsheet data created in Excel would be represented within a spreadsheet using the 1-2-3 interface and either user could alter the data given proper permission.

Presence-AR consists of a runtime environment and adapters for specific applications. The run-time is a 157K-byte block of code that can install on just about any desktop or device. It creates a collaboration environment and brokers the data representation. The adapters are written to hook applications to the run-time and provide interactive capabilities such as editing as well as business rules and other access controls.

Presence-AR run-time environments are connected using peer-to-peer technology for ad hoc collaboration or in a server-centric fashion where data is stored centrally. The software provides security such as authentication and encryption.

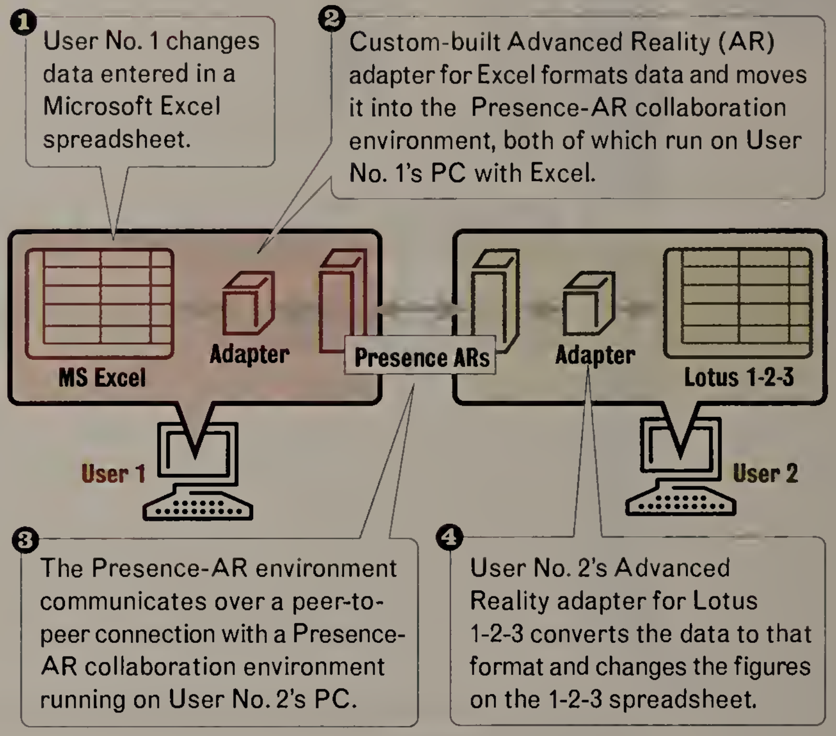
The software lets users work in real-time and asynchronous modes. While it has a unique technology that makes data collaborative, it competes with Groove Networks.

Presence-AR costs $50,000 to $200,000, based on the number of adapters and software licensing. Advanced Reality is creating a C# version for compatibility with Microsoft's .Net initiative.

Advanced Reality: www.advancedreality.com

## Data sharing

**Advanced Reality has created a collaboration tool that lets users exchange data in real-time without having to change the application they typically work in.**



❶ User No. 1 changes data entered in a Microsoft Excel spreadsheet.

❷ Custom-built Advanced Reality (AR) adapter for Excel formats data and moves it into the Presence-AR collaboration environment, both of which run on User No. 1's PC with Excel.

❸ The Presence-AR environment communicates over a peer-to-peer connection with a Presence-AR collaboration environment running on User No. 2's PC.

❹ User No. 2's Advanced Reality adapter for Lotus 1-2-3 converts the data to that format and changes the figures on the 1-2-3 spreadsheet.

---

**Q A**

## Q&A

continued from page 25

becoming like the body. We take for granted our body, when it gets cold we shiver, when it gets hot we sweat. When we're at the airport and suddenly hear a gate change, we start running. You don't tell your body to have extra blood flowing and increase your heart rate. Autonomic is the same way for computers. Something may go wrong — say with the server power supply — it'll e-mail IBM, telling us the power supply may go in the next 30 days, send somebody out to fix it and please bring this part number with them.

Grid computing would enable multiple computers to act like a single computer. The idea is to increase the level by connecting clusters [of computers] together. It's IT on tap; it's an unlimited resource.

**How do you define Web services and how is IBM differentiating itself from BEA Systems, Microsoft and others?**

The term is misleading and occasionally there's a little confusion. The technology of Web services is a new set of standards for the Web. The standards do allow for linking together application programs without recognizing the language they're written in and the platform they're running on.

Our strong suit is the ability to pull all of this together. Hopefully the other [vendors] will follow the same standards and we won't get one company making it proprietary in some way. We have consultants; hardware, software, database; and train people; and we can operate it for them if they like. We can make Web services real for companies.

**How have businesses been impacted by Sept. 11? What things are you doing differently?**

It's fair to say it's increased awareness. There's a sense of urgency for Internet security and integration of systems, disaster recovery, and planning all forms of preparedness to withstand the unthinkable. It's good to ask are we ready and do we have everything in place?

Aside, individuals generally don't back up their PCs, so we need better security. You have to ask yourself how do you think about security — do you put a post-it on your desktop with your password, under your keyboard or in drawer? If you do, then no, it's not OK. We all need to be more conscious, as there is more and more data of customers and suppliers online. ■

**More online!**
Read the extended interview with IBM's John Patrick.
**DocFinder: 7232**

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## MFormation

continued from page 25

will send that device data to the server.

Jeb Bolding, an analyst with Enterprise Management Associates, says mFormation Enterprise Manager goes beyond wireless management from companies such as Computer Associates and Tivoli Systems, which have products that provide asset management for wireless devices. He says mFormation software can perform real-time performance and availability monitoring on a wireless device, as well as asset management functions that would indicate to network managers the software and applications installed on the device.

"It seems to me that they have really covered everything with this software, but the company is ahead of user demand and may suffer in that sense," he says.

He says users may first see the company as a competitor to the likes of CA, Tivoli and Hewlett-Packard, but in fact, data collected by mFormation can be integrated into management consoles from those vendors. Other competitors include Mobile Automation, Callisto and Xcellenet.

"It would make a lot of sense for the CAs and the Tivolis to partner with the company that's already done the development work," he says, referring to mFormation.

Because wireless devices are small and easily lost or stolen, mFormation provides several security functions with its Enterprise Manager software. For example, if a device is lost, the server can send commands to the agent to lock the device, delete all contents of the device and halt the delivery of content to the device.

As for wireless networks, carriers and providers, mFormation works with Cingular/Mobitex, Motient, Code Division Multiple Access, Cellular Digital Packet Data and Global Package Radio Service.

Available now, mFormation Enterprise Manager costs $10,000 for the server software and between $40 and $70 per device for the agent component depending on the number of agents purchased.

mFormation: www.mformation.com

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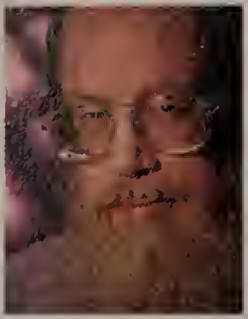
**'NET INSIDER**

Scott Bradner



# Will the bits ever make it home?

The Computer Science and Telecommunications Board of the National Academies of Science has produced a careful study of the promises and difficulties inherent in the pursuit of widespread broadband deployment. The board concluded that such deployment would be good to have, but it won't be easy to get there.

Like the board's previous endeavors, "Broadband: Bringing Home the Bits" is on the Web (or at least a prerelease version is) at www.nwfusion.com, DocFinder: 7224.

The committee didn't have an easy time, in no small part because the telecommunications world changed so much during the course of the year and a half that it worked on the study. The telecom world was a lot sunnier when the board started than when it finished.

The committee compiled a number of key questions that needed to be addressed, including:

- What is broadband?
- Why do people need it?
- How much demand is there?
- How important and urgent is the development of broadband?
- What is the likely shape of broadband development in the coming years?
- Is the pace of development reasonable and adequate, or are there failures that necessitate intervention?
- How will deployment be paid for?
- How might the present policy regime for broadband be made more effective?

The board provided answers to these questions.

In what I have read of the report so far, the board seems to be just as puzzled as I've been about how a company can actually make money as an ISP. The board warns that one tact ISPs could take — getting into the content business and providing restricted semi-Internet services — would be counter to the aim of the flexibility inherent in today's Internet service.

One theme the report comes back to more than once is that whenever regulations are felt to be needed — we can disagree when they are actually needed — the regulations should be service-based, not transport technology-based. What difference does it matter how Enhanced 911 (emergency phone service that reports the caller location) is done as long as it provides the appropriate information, and why should regulations for coaxial cables be different just because they are coaxial?

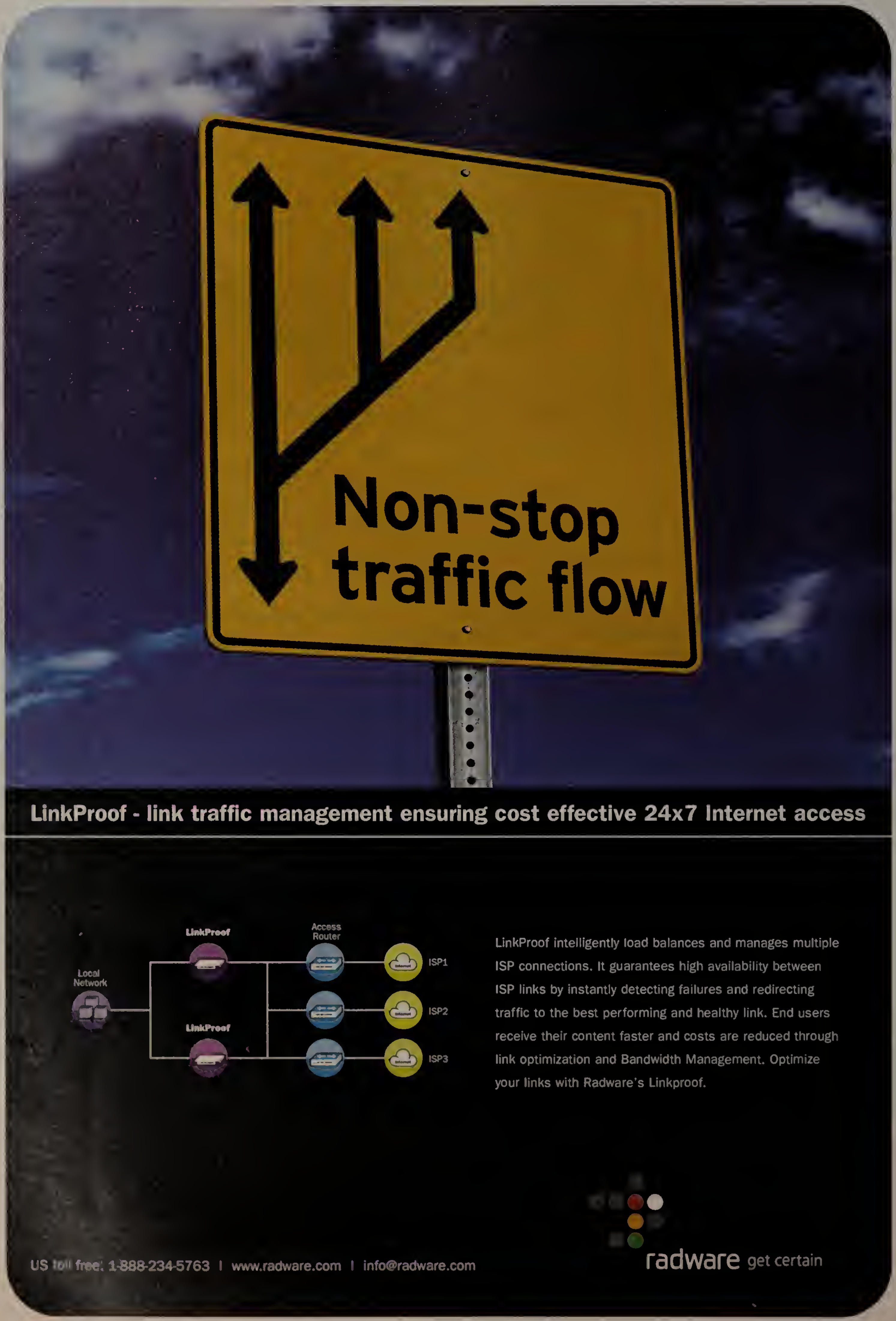
The board makes seven specific recommendations, some of which have subrecommendations. I will not go through all of them, but a few are worth highlighting.

In spite of all the furor in Washington, D.C., the board writes it is too early to work on a universal service plan for broadband. It's better to wait until we at least know what broadband is. In a recommendation that is bound to be controversial, the board says cable and phone infrastructures should be regulated in the same way and not by forced unbundling.

All in all, the report is an interesting piece of work. It would be good if the people who asked for it (such as the U.S. government) actually follow its guidance.

Disclaimer: The U.S. government does not even follow Harvard's guidance and the above book report is my own rambling.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.*



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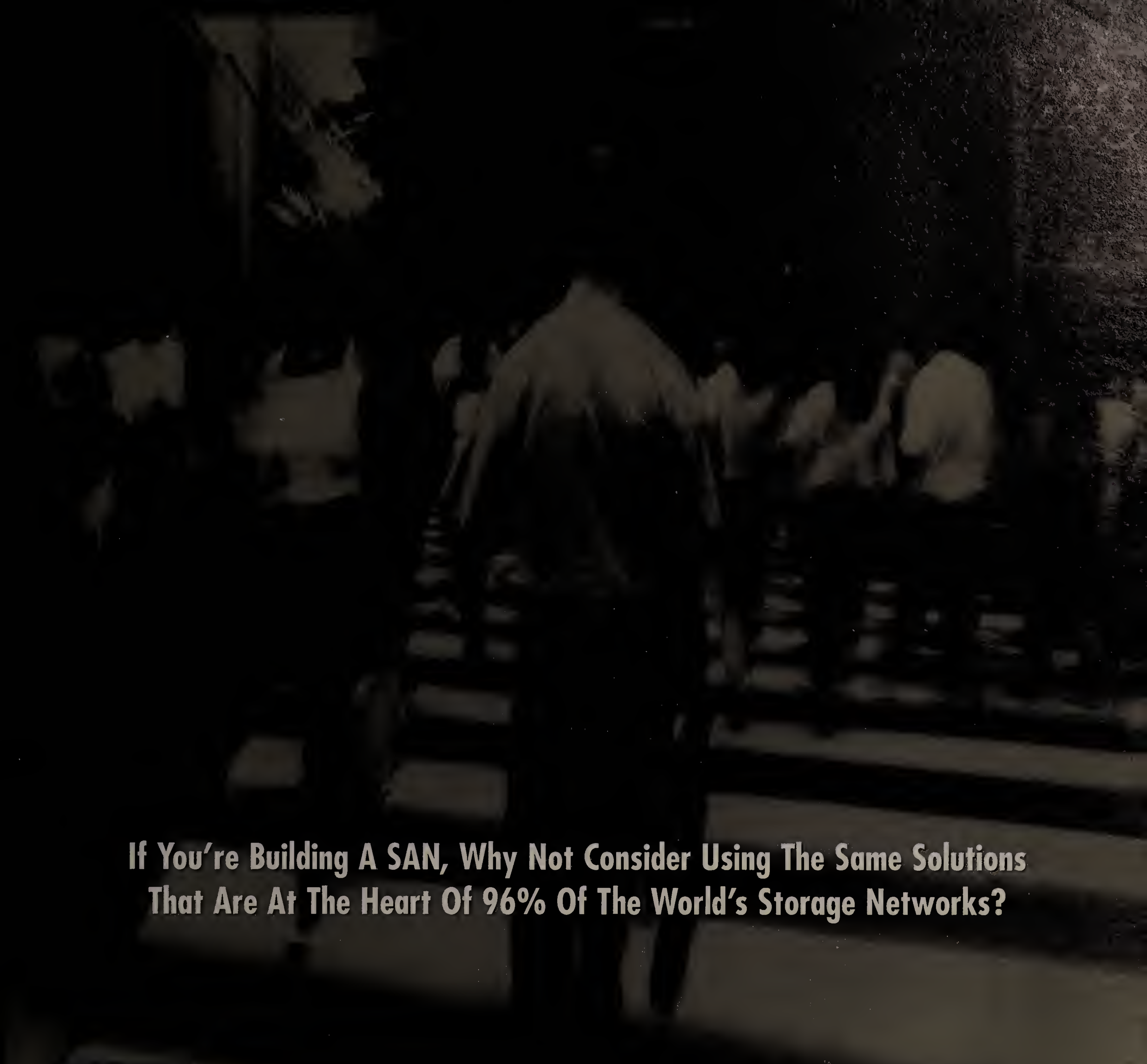

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# Net.Worker

■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

# Remote workers count on safety nets

Veritas, CA and Novell announce new versions of remote back-up and recovery tools.

■ BY DENI CONNOR

If you lived or worked in New York at the time of the terrorist attacks in September, you may be thankful for software that Veritas, Computer Associates and Novell are launching that backs up and recovers data and configurations from lost or damaged PCs.

Veritas rolled out NetBackup Professional 3.5 last week; CA is introducing BrightStor Mobile Backup this week; and Novell will release the next version of its iFolder PC backup and file synchronization software early next year — all three let IT managers back up remote laptops and desktops, and save their configurations to rescue CDs in the event of data or laptop loss.

According to Safeware, an insurance agency that insures laptops, 1.35 million laptops were destroyed or stolen last year in the U.S. and Canada, necessitating recovery of their data assets. Back-up software packages for mobile users also require automatic, unattended and unobtrusive back up of remote laptops for users who don't have the time or inclination to back up their laptops themselves. According to Ernst and Young, less than 4% of users perform regular backups.

Veritas' NetBackup Professional 3.5 works with Windows and Unix desktops to protect them from viruses, loss, hardware failure or user error. It consists of a Web- or Windows-based administrative console, the Windows or Solaris server, and agent software for client workstations. In NetBackup Professional, the client software conducts an inventory of the hard disk and transfers the results to the host computer. The host compares this inventory with information it stores about the computer and identifies all common files. The host then sends the client the "compare" list, and the client workstation sends all unique files to the host. After that first full backup, only changed files are updated, saving connection time.

NetBackup Professional also lets the network manager create a set of replacement CDs in the event of damage so that the user can reinstall software and files to a new PC.

Veritas has added the ability to migrate and recover data from offline sources, authentication for non-Windows NT envi-

See Backup, page 32

## Backup and recovery software for the mobile set

**Some packags provide only backup and recovery, others go further to give remote users access to their network files.**

| Company | Product | Price |
|---|---|---|
| Computer Associates | **BrightStor Mobile Backup** | $140 per user |
| Connected | **Connected TLM** | Varies depending on number of users. |
| Mobility | **Network/Unplugged** | $60 per user |
| Novell | **iFolder** | $50 per user |
| StorActive | **LiveBackup** | $130 per user |
| Veritas | **NetBackup Professional** | $70 per user; $100 per server |

## Short Takes

■ **Agere Systems** recently announced the WiFi Broadband Gateway for sharing a cable or DSL connection using 802.11b wireless network technology. The low-cost **BG2000** has a built-in access point, and two Ethernet ports, one for the WAN and one for wired Ethernet. The gateway includes 128-bit encryption, an IP and packet-filtering firewall and support for 10 simultaneous VPN connections. Web-based tools let network managers remotely configure and manage the box for their teleworkers. The BG2000 will ship in January and cost $200. www.orinocowireless.com

■ Last week, **Alloptic** launched its **homeG.E.A.R 1000** Gigabit Ethernet IP optical platform, which is designed to deliver voice, video and high-speed data (up to 1.25G bit/sec) to residences over a passive optical network infrastructure. Geared to service providers, homeG.E.A.R will give residential fiber subscribers a range of fiber-to-the-home services, including four 10/100Base-T Ethernet ports, two to four toll-quality telephone circuits, IP multicast video and IP and Radio Frequency CATV lines. Alloptic says homeG.E.A.R 1000 is undergoing field trials and should be available in the first quarter of 2002. www.alloptic .com

## Keeping mobile attorneys connected

Womble Carlyle Sandridge & Rice CIO Sean Scott says Connected's backup and recovery software has saved him time and money, and relieved his worries about attorneys on the road who can't get to their files.

Connected offers its software as a service or purchased product for backing up remote or mobile workers. At the firm of Womble Carlyle in Winston-Salem, N.C., 80% of the attorneys use the software. When they connect to the Internet, their laptops are immediately backed up.

Before using Connected, Scott says that Womble Carlyle gave its attorneys Iomega Jaz drives to back up their data files, but had no way to back up applications and operating systems.

"Connected was one of the first products we saw that was able to do that efficiently," Scott says. "We can burn the application files, [the Windows] Registry, operating system and data files onto a rescue CD and send them to an attorney who's traveling to restore his machine."

Most of the firm's documents are generated and backed up using a document management system. The company also wanted to be sure it got a back up of those files, such as Excel files, that fall beyond the system.

"We have many attorneys who travel, and we need to be confident that they don't have system issues that prevent them from doing their work when they're on the road," Scott says. "If they lose one of their files, they can do one of two things. We give them documentation they keep in their laptop bag to walk through what Connected calls a healing disk or they can call the help desk, who can walk them through the process of restoring their files or operating system. They typically call the help desk."

The help desk uses Timbuktu or pcAnywhere to connect to that user's laptop, and once the help desk staffer has control of the machine, he can run Connected for the attorney.

Connected will automatically back up files that are part of a schedule. If attorneys are on a slow modem connection, the software knows better than to back up the system.

But on broadband, Connected will launch depending on speed of line. Most attorneys depend on high-speed access.

"Connected has to be very automated for the attorney out traveling," Scott says. "If backup is voluntary, it's not going to happen."

**— Deni Connor**

## Backup

continued from page 31

ronments, support for Windows XP workstations, customized parameters for low-speed connections and an option that allows network administration via a command-line interface. NetBackup Professional will be available this month for $70 per client and $100 per server.

### Speed increased 200%

CA's BrightStor Mobile Backup is a similar product aimed at mobile users dialing up to the network, remote users using an ISP and traveling users connecting to the network over a VPN. It works on any Windows 95 to XP-based workstation and backs up only the information in a file that has changed. The company says the average amount of data backed up for individual users rarzely exceeds 600K bytes.

Mobile Backup has several new features. The Open File Agent placed on the user's system lets files that are open be backed up during normal back-up operations, without interrupting the user. The graphical interface the user sees has been changed to resemble the familiar Windows Explorer program.

One of the most important enhancements to Mobile Backup is the speed at which backups are performed. According to the company, Mobile Backup has increased back-up speed by as much as 200% over the previous version by differentiating between the type of file being saved — the IT manager can create data sets consisting of file-oriented or block-oriented data and specify which best applies to a particular user.

Each file type is backed up in a different manner, optimizing the speed of the back-up process. A user backing up several database files or a large Outlook .pst file would use the block-level differencing method, while those backing up Word documents would use file-level differencing. BrightStor Mobile Backup 3.5 is available for $140 per user.

### Access from any location

Like Veritas and CA products, Novell's iFolder backs up files and creates an image of information on the PC. But iFolder goes one better by providing file synchronization services. With iFolder, remote users can access their files from any location whether they have their laptops or not. A salesperson may want to show a PowerPoint presentation to a sales prospect. After logging on to the browser-based portal from the customer's PC, the salesperson would have access to his files.

IFolder runs on Windows NT or 2000 server and backs up any Windows workstation byte-by-byte. New features to be introduced early next year are support for Linux and Solaris servers and PDAs. The product will also be available to service providers that want to provide backup and file synchronization services to home consumers. IFolder costs $50 per user and is available now.

If you need backup and recovery of data and PC images, consider products such as those from Veritas, CA or Legato. If you want to combine backup with remote file access, look to products and services from Novell or Connected. If you want to purchase back-up and recovery services only, turn to Connected or Mobility. ■

**More online!**

Read our special report on "Safety Nets" and get links to disaster-recovery planning advice, a steganography Flash demo and more.

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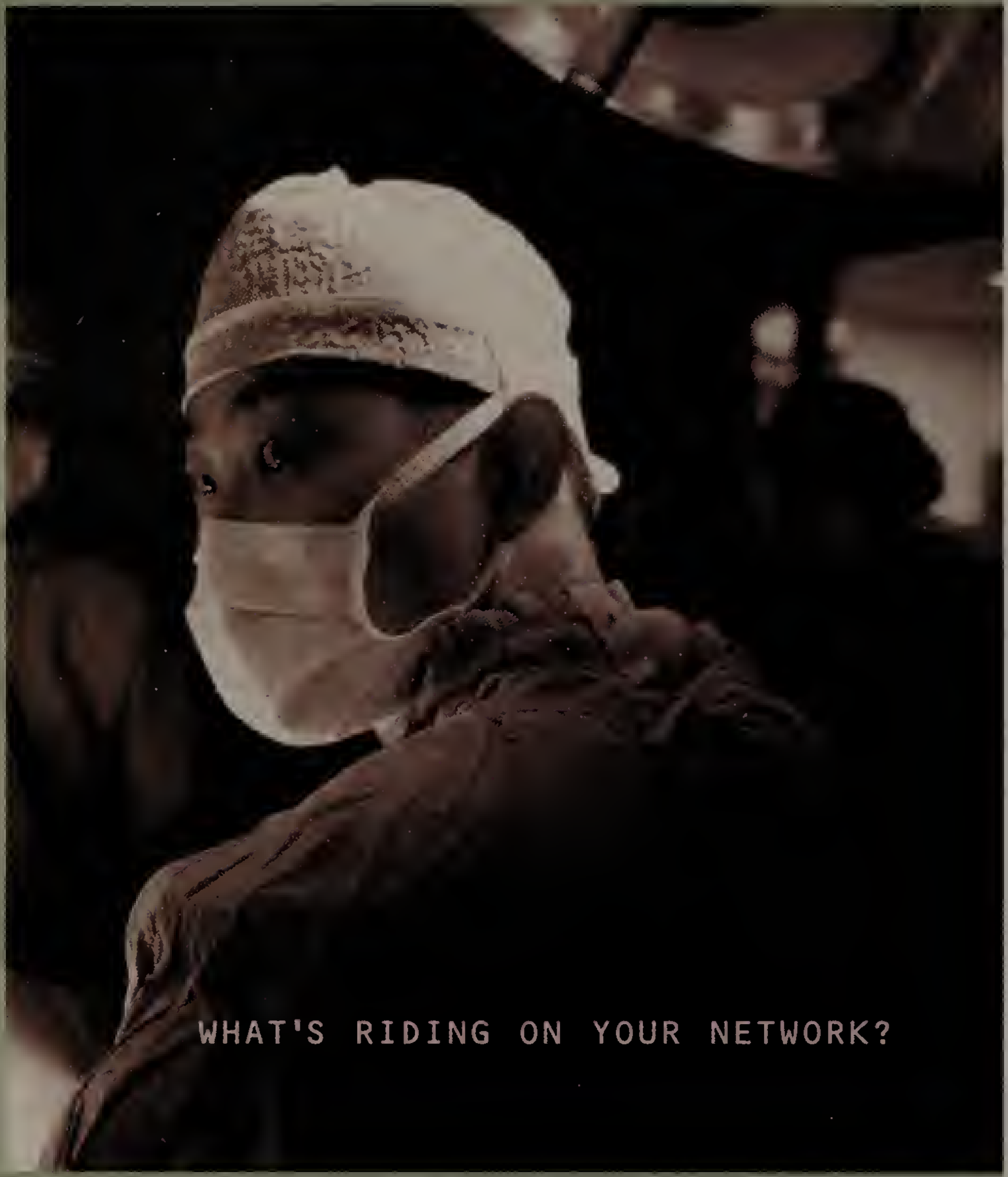
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## 1. What is the principal business activity at your location?

(check ONE only)

01.☐ Manufacturing (Non-Computer/ Communications OEM)
02.☐ Finance/Banking
03.☐ Insurance/Real Estate/Legal
04.☐ Health Care Services
05.☐ Hospitality/Entertainment/ Recreation
06.☐ Media/TV/Cable/Radio/Print
07.☐ Retail/Wholesale Trade/Business Services
08.☐ Transportation
09.☐ Utilities/Process Industries (Mining/Construction/ Petroleum Refining/ Agriculture/Forestry)
10.☐ Government/Military
11.☐ Consulting (Independent) *
12.☐ Education
13.☐ Carriers/Voice/Data/ISP
14.☐ Web Hosting/HSP
15.☐ ASP/SSP/MSP
16.☐ Manufacturing (Computer/ Communications/OEM)
17.☐ Resellers/VARs/VADs/ Integrators/Distributors* (Computers/Communications)
18.☐ Other (please specify) ________

*Attn Consultants, Integrators, Distributors, Resellers: Please complete form based on ALL clients and your own business needs

## 2. P: What is your primary job function? (check ONE only) S: What additional job functions are you involved in? (check ALL that apply)

P S
☐ 1. ☐ Network Management
☐ 2. ☐ CIO/CTO/IS/IT/MIS/ Systems Management
☐ 3. ☐ LAN Management
☐ 4. ☐ Datacom/Telecom Management
☐ 5. ☐ Internet/Intranet/Web/ E-Commerce Management
☐ 6. ☐ Engineering Management
☐ 7. ☐ Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)
☐ 8. ☐ Consultant (Independent)
☐ 9. ☐ Other (please specify) ________

## 3. What is the estimated value of network equipment and services that you specify, recommend, or approve the purchase of?

(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–0.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/ Workstations)*
C ____ Mobile *(including PDAs, Wireless)*
D ____ Servers
E ____ LANs
F ____ WAN Equipment
G ____ Carrier Services
H ____ Internet/Web/E-commerce
I ____ Intranet/Extranet
J ____ Internetworking *(including Routers, Switches)*
K ____ Storage
L ____ Remote Access
M ____ Peripherals
N ____ Software
O ____ Service/Support Services

## 4. What is the total number of sites for which you have purchase influence?

(check ONE only)

1. ☐ 100+ 2. ☐ 50 to 99 3. ☐ 20 to 49 4. ☐ 10 to 19 5. ☐ 2 to 9 6. ☐ 1 7. ☐ None

## 8. Please indicate the Web/Security/LAN/Internetworking/Wireless/Mobile/WAN Equipment/ Carrier Services that you are currently involved in purchasing or plan to purchase:

(check ALL that apply) A. Currently involved in purchasing B. Plan to purchase

WEB

A B
☐ 01. ☐ Web Servers/Software
☐ 02. ☐ Web Traffic Management
☐ 03. ☐ Electronic Commerce Tools
☐ 04. ☐ Web Development Tools
☐ 05. ☐ Web Content Management
☐ 06. ☐ Web Collaboration/ Groupware
☐ 07. ☐ Web Acceleration/Caching/ Load Balancing
☐ 08. ☐ Web Hosting Services
☐ 09. ☐ Other

SECURITY

A B
☐ 10. ☐ Firewalls
☐ 11. ☐ Anti-Virus Software
☐ 12. ☐ Private Key Encryption Tools
☐ 13. ☐ DES Encryption Tools
☐ 14. ☐ Authentication Tools
☐ 15. ☐ Intrusion Detection
☐ 16. ☐ Certificate Authorities
☐ 17. ☐ Biometrics
☐ 18. ☐ Other

LANs/INTERNETWORKING

A B
☐ 19. ☐ Fast Ethernet
☐ 20. ☐ Gigabit Ethernet
☐ 21. ☐ Layer 3-7 Switches
☐ 22. ☐ ATM Switches
☐ 23. ☐ Routers
☐ 24. ☐ Network Attached Storage (NAS)
☐ 25. ☐ Storage Area Networks (SANs)
☐ 26. ☐ Storage Backup (Optical, Disk, Tape, RAID)
☐ 27. ☐ Network Test/Diagnostic Tools
☐ 28. ☐ Uninterruptable Power Supplies (UPS)
☐ 29. ☐ Network Interface Cards (NICs, PCMCIA)
☐ 30. ☐ Hubs/Intelligent Hubs/ Stackable Hubs
☐ 31. ☐ Cables,Connectors, Baluns
☐ 32. ☐ Wiring/Fiber Systems
☐ 33. ☐ Net Management Systems
☐ 34. ☐ Voice Over IP (VoIP) Tools
☐ 35. ☐ Network Analyzers
☐ 36. ☐ Other Local-Area Network/ Internetworking

WIRELESS/MOBILE

A B
☐ 37. ☐ Wireless LANS
☐ 38. ☐ Wireless/Cell Phones
☐ 39. ☐ Wireless LAN Extension Tools
☐ 40. ☐ Mobile Data Equipment/Services
☐ 41. ☐ PDAs
☐ 42. ☐ Other Remote/Wireless

WAN EQUIPMENT

A B
☐ 43. ☐ Frame Relay Equipment
☐ 44. ☐ Bandwidth Managers
☐ 45. ☐ Bandwidth Shaping/QOS Tools
☐ 46. ☐ VPN Equipment
☐ 47. ☐ ATM Switches
☐ 48. ☐ Voice/Video over IP Gateways
☐ 49. ☐ Modems
☐ 50. ☐ Cable Modems
☐ 51. ☐ xDSL Products
☐ 52. ☐ Diagnostic/Test Equipment
☐ 53. ☐ DSUs/CSUs
☐ 54. ☐ PBXs
☐ 55. ☐ Call Center Tools
☐ 56. ☐ Videoconferencing Gear
☐ 57. ☐ ISDN Equipment/Services
☐ 58. ☐ Other WAN Equipment/Services

CARRIER SERVICES

A B
☐ 59. ☐ Internet Access
☐ 60. ☐ Private Lines
☐ 61. ☐ Frame Relay Services
☐ 62. ☐ ADSL/DSL
☐ 63. ☐ T-1/T-3 Services
☐ 64. ☐ ATM Services
☐ 65. ☐ Managed Services
☐ 66. ☐ VPN Services
☐ 67. ☐ LAN-Extension Services
☐ 68. ☐ OC-3/OC-12
☐ 69. ☐ Wavelength Services
☐ 70. ☐ Dark Fiber
☐ 71. ☐ Other Carrier Services

None of the above (1 – 71) A ☐ 72. B ☐

## 9. Please indicate the Systems/Peripherals/Software/Applications/Business Services that you are currently involved in purchasing or plan to purchase:

(check ALL that apply) A. Currently involved in purchasing B. Plan to purchase

SYSTEMS/PERIPHERALS

A B
☐ 01. ☐ Laptops/Notebooks
☐ 02. ☐ Desktops
☐ 03. ☐ Intel-Based Servers
☐ 04. ☐ Risc-Based Servers
☐ 05. ☐ Print Servers
☐ 06. ☐ Fax Servers
☐ 07. ☐ Remote Access Servers
☐ 08. ☐ Video Servers
☐ 09. ☐ Mid-Range Systems (including workstations)
☐ 10. ☐ Mainframes
☐ 11. ☐ Printers
☐ 12. ☐ Enclosures/Racks/Furniture
☐ 13. ☐ Other Computers/ Peripherals

SOFTWARE/APPLICATIONS

A B
☐ 14. ☐ Desktop/Server Operating Systems
☐ 15. ☐ Network Management
☐ 16. ☐ Systems Management
☐ 17. ☐ Directory Services
☐ 18. ☐ E-Mail
☐ 19. ☐ Groupware
☐ 20. ☐ Database Management Systems
☐ 21. ☐ Customer Resource Management (CRM)
☐ 22. ☐ Enterprise Resource Planning (ERP)
☐ 23. ☐ XML Tools
☐ 24. ☐ Desktop Videoconferencing
☐ 25. ☐ Middleware
☐ 26. ☐ Document Management Tools
☐ 27. ☐ Site Metering Tools
☐ 28. ☐ Software Distribution Tools
☐ 29. ☐ Data Warehousing
☐ 30. ☐ Applications Development Tools
☐ 31. ☐ Other Software/Applications

BUSINESS SERVICES

A B
☐ 32. ☐ Application Service Provider Services
☐ 33. ☐ Systems Integration/ Consulting
☐ 34. ☐ Education/Training Services
☐ 35. ☐ Other Services

None of the above (1 – 35) A ☐ 36. B ☐

## 10. Please indicate the platforms that are currently installed/planned:

(check ALL that apply) A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A B
☐ 01. ☐ TCP/IP v4
☐ 02. ☐ TCP/IP v6
☐ 03. ☐ SNA/APPC/APPN/LU6.2
☐ 04. ☐ Novell IPX/SPX
☐ 05. ☐ NETBIOS/NETBUEI
☐ 06. ☐ NFS
☐ 07. ☐ Other Network Protocols

LAN/WAN ENVIRONMENT

A B
☐ 08. ☐ Gigabit Ethernet
☐ 09. ☐ Switched Ethernet
☐ 10. ☐ Fast Ethernet
☐ 11. ☐ Ethernet
☐ 12. ☐ ATM
☐ 13. ☐ Token Ring/Token Ring Switching
☐ 14. ☐ Layer 3-7 Switching
☐ 15. ☐ FDDI
☐ 16. ☐ Fibre Channel
☐ 17. ☐ Wireless LANs
☐ 18. ☐ DSL
☐ 19. ☐ ISDN
☐ 20. ☐ Frame Relay
☐ 21. ☐ Private Line T1, T3, OC-3, OC-12
☐ 22. ☐ Other LAN/WAN Environment

DESKTOP/SERVER OPERATING SYSTEMS

A B
☐ 23. ☐ Windows 2000
☐ 24. ☐ Windows 95/98
☐ 25. ☐ Windows NT/Windows 2000
☐ 26. ☐ Novell (NetWare 5.X, 4.X, 3.X, 2.X)
☐ 27. ☐ LINUX
☐ 28. ☐ Intel based UNIX
☐ 29. ☐ RISC based UNIX (incl. SOLARIS)
☐ 30. ☐ IBM MVS/VM/VSE/ESA
☐ 31. ☐ OS/400
☐ 32. ☐ Digital VMS
☐ 33. ☐ Macintosh
☐ 34. ☐ Palm OS
☐ 35. ☐ Windows CE
☐ 36. ☐ Other Network Operating System

None of the above (1– 36) A ☐ 37. B ☐

*Continued on next page...*

*Continued from page one...*

## 5. What is the total number of Servers/Clients installed/planned at your location/in your entire organization? (check ONE box in each column)

| SERVERS At Location A | | SERVERS Entire Org. B | CLIENTS At Location C | | CLIENTS Entire Org. D |
|---|---|---|---|---|---|
| ☐ | 1. 50,000+ | ☐ | ☐ | 1. 50,000+ | ☐ |
| ☐ | 2. 10,000 to 49,999 | ☐ | ☐ | 2. 10,000 to 49,999 | ☐ |
| ☐ | 3. 1,000 to 9,999 | ☐ | ☐ | 3. 1,000 to 9,999 | ☐ |
| ☐ | 4. 100 to 999 | ☐ | ☐ | 4. 100 to 999 | ☐ |
| ☐ | 5. 50 to 99 | ☐ | ☐ | 5. 50 to 99 | ☐ |
| ☐ | 6. 10 to 49 | ☐ | ☐ | 6. 10 to 49 | ☐ |
| ☐ | 7. 1 to 9 | ☐ | ☐ | 7. 1 to 9 | ☐ |
| ☐ | 8. none | ☐ | ☐ | 8. none | ☐ |

## 6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

**A. Scope** (check ONE only)

CORPORATE/ENTERPRISE:
1. ☐ Entire Enterprise/ Multiple Enterprises
2. ☐ Multinational Enterprise
3. ☐ Division/Multiple Divisions
4. ☐ Department
5. ☐ None

**B. Involvement** (check ALL that apply)

1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

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## 7. What is the estimated number of employees in your entire organization/at your location? (check ONE in each section)

**A. Entire organization:**
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

**B. At your location:**
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

## 11. Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

**A - Servers**
1. ☐ IBM (Mainframes)
2. ☐ IBM RS/6000
3. ☐ IBM AS/400
4. ☐ Compaq/Digital/ Tandem
5. ☐ Unisys
6. ☐ H-P
7. ☐ Other

**B - Workstations/Desktops/Laptops**
1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Compaq/Digital
4. ☐ IBM
5. ☐ Dell
6. ☐ Gateway
7. ☐ Fujitsu
8. ☐ Other

## 12. What is the estimated gross revenue of your entire company/institution? (check ONE only)

1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or Less
10. ☐ None of the above

## 13. For which areas outside of the U.S.A. do you have purchase influence? (check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

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# Equant polishes up IP VPN offerings

New services and integration of those acquired through Global One part of mix.

■ **BY DENISE PAPPALARDO**

Equant is forging ahead with IP VPN service enhancements and integration with offerings it acquired through a merger with Global One in June.

A byproduct of the enhancements will be lower voice-over-IP service costs for IP VPN customers, Equant says.

Equant and Global One were offering Multi-protocol Label Switching [MPLS] data services prior to merging six months ago. Equant has been integrating the companies' networks and service offering, which were based on the same network infrastructure from Cisco. Both were also offering guaranteed classes-of-service.

While the companies' IP VPN services were supporting voice, Equant is offering an integrated voice over IP to many of its IP VPN customers. Equant is using a single platform to support its voice-over-IP capabilities and says users are saving more on termination fees.

"[Voice-over-IP] termination rates have been reduced by 25% to 33%," says Gopi Gopinath, head of Equant's IP and Data Services division.

Equant has deployed Hewlett Packard/Netcentrex voice-over-IP gateways throughout its networks to support the service. Voice over IP is available in 58 of the 140 countries that Equant offers IP VPN. There are regulatory issues in many countries that prevent Equant from offering voice over IP in more areas, Gopinath says. Equant plans to upgrade its IP VPN service within six months. Included will be enhanced call center support for voice-over-IP customers. At the same time, Equant is also planning to bundle its Internet Direct access service with its IP VPN offering. "Customers will be able to use the same router and dedicated line to access the Internet and their IP VPN," Gopinath says.

The service will let users dedicate a portion of the bandwidth from their connection, which could be frame relay, ATM, private line, X.25 or asymmetric DSL in some countries, for Internet access only.

APL, one of the world's largest container shipping companies, recently signed a three-year contract with Equant to connect 180 sites in 30 countries to its IP VPN Service, although the company is not using the voice-over-IP features.

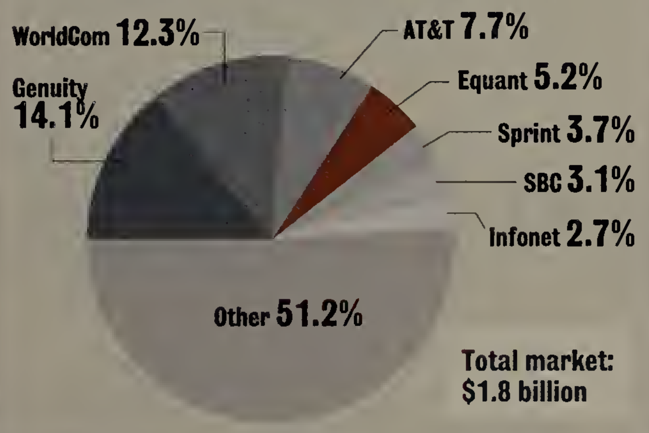
APL in Oakland, Calif., chose Equant because the company offers a fully managed service with stringent service-level agreements, says CIO Cindy Stoddard. "We were looking for a service provider with global reach that could offer very high reliability because a lot of our operations run 24-7," she says.

Before teaming with Equant, APL used frame relay services from one service provider, Stoddard says. But that provider would use other carrier networks to meet APL's global needs where it did not have its own coverage. "We wanted to move to a carrier that operated one network," she says. ■

## Equant a VPN leader

**Equant ranks fourth among VPN service providers, according to IDC. Equant says it has 445 IP VPN customers and 10,000 sites connected to its service.**

**U.S. carrier VPN services revenue share, 2001**



## Short Takes

■ **SBC** and **Verizon** continue to pay fines to the federal government for failing to meet performance targets designed to ensure that competitors are getting access to regional Bell operating company networks. Last month, SBC forked over $3.51 million, bringing the company's total fines to more than $50 million since SBC began paying in December 2000. Verizon paid an $841,294 fine last month, bringing its total to about $4 million since Verizon began paying in August 2001. www.sbc.com; www.verizon.com.

■ **Sprint** is beefing up service-level agreements (SLA) for Internet access customers overseas. The carrier announced last week that it's now guaranteeing customers will not experience more than .3% packet loss when sending traffic in Europe; in Asia; across the Atlantic; across the Pacific; between the U.S. and Japan; between the U.S. and Hong Kong; or between the U.S. and Australia. In July, Sprint announced this SLA for traffic within the U.S. only.

# Akamai availability-protection service keeps eyes glued to Victoria's Secret site

■ **BY JENNIFER MEARS**

CAMBRIDGE, MASS. — Victoria's Secret can't afford to have its brand name tarnished by downtime on its Web site. For that reason, the lingerie retailer is taking advantage of new services from Akamai that the vendor claims will virtually guarantee every customer can access the site at any time.

The managed service that Akamai announces this week, EdgeSuite for Business Continuity, is designed to protect a site's infrastructure and keep the site available 100% of the time.

The services include:

- Site failover, which automatically redirects URL requests to a copy of the site stored on an Akamai server if the origin server goes down;
- Site shield, which protects the origin server from attack by letting it communicate only with a certain set of Akamai servers that only accept requests from the Akamai network, making the origin server inaccessible from the Internet;
- Enhanced DNS, which distributes DNS servers across multiple networks;
- Secure content delivery, which enables a secure delivery between the end user and the origin server.

The offerings enhance Akamai's EdgeSuite service, which lets companies deliver entire Web sites, including dynamic content, from thousands of Akamai caching servers at the edge of the Internet.

Victoria's Secret has been using the Akamai content-delivery service for 18 months. In preparing for the online response to its TV broadcast of a fashion show on November 15, the company found it could save time and money by using Akamai's EdgeSuite Failover service.

Tim Plzak, director of advanced technology for Limited Technology Services, which manages the Victoria's Secret Web site, says he can now quickly prepare for spikes in traffic.

In the past, Plzak says, it would have taken four to six months to install hardware and create a global load-balancing network that intelligently routed content to the most available servers. By using the Akamai service, he cut his preparation time to four to six weeks and has a more reliable setup, he says.

Pricing for EdgeSuite starts at $20,000 per month. The services are sold as add-ons and cost between $5,000 and $18,000 per month.

Akamai: www.akamai.com

**EYE ON THE CARRIERS**

Lisa
Pierce

# Much to weigh with metro Ethernet services

Businesses interested in becoming early adopters of metropolitan and long-haul Ethernet services should consider the following criteria when evaluating providers:

- Ownership of the enterprise customer: Incumbent local exchange carriers (ILEC) XO Communications, GiantLoop Network and Yipes serve business customers, while providers such as Telseon cater to service providers. Others including Cogent Communications specialize in serving niches such as multitenant units.
- Ownership of the fiber: ILECs and large competitive local exchange carriers (CLEC) own their networks. Most providers that only offer Ethernet services don't.
- Resiliency of the infrastructure: Some providers provision service on redundant rings with standby service. Others provision service on a single strand, with no failover protection.

Some carriers' network management capabilities prevent over-subscription while others are not as sophisticated and may experience congestion.

- Performance warranties: Preliminary service-level agreements and service-level objectives exist, but metrics vary sharply by provider.

Three distinct types of service have emerged:

- Services aimed at the companies, typically offered as managed Layer 3 VPN services and include tunneling, encryption and firewalls.
- Services targeted at the service provider and carrier market provide true Layer 2 Ethernet capabilities, and like their enterprise services cousins, are proprietary services managed on an end-to-end basis.
- At the very high end, transport-centric wavelength services targeted at carriers, value-added service providers and ultralarge companies provide pure, point-to-point bandwidth (OC-12, OC-48 and OC-192).

With the exception of XO, most CLECs offer service in the top 20 or fewer markets. XO's 10M and 100M bit/sec services are available in all 64 of its markets, but its Gigabit Ethernet service is only available in the top 15 cities it serves.

Many of these services are confined to connecting sites within a single city. However, XO, Yipes and Broadwing (through its relationship with Telseon) recently announced long-haul Layer 2 and Layer 3 services. Sprint is the first tier-one interexchange carrier to announce a long-haul wavelength service.

Providers that focus on serving enterprise customers typically offer a variety of services. In contrast, many new providers only offer Ethernet and/or wavelength service.

Most of the providers that focus on serving companies are publicly held — the one exception is Yipes, which has raised $219 million in three rounds of financing. In contrast, many of the providers that serve carriers and service providers are privately held; notable exceptions include Neon, Metromedia Fiber Network and XO.

The financial sector, and thus New York, is a critical market for all providers that offer these services. The events of Sept. 11 will likely strain the financial resources of several new metro Ethernet and wavelength providers and will spur early industry consolidation.

Even though Ethernet is a worldwide standard for LANs, all existing metro Ethernet services are managed by providers on an end-to-end basis and include the routers or cards to interconnect the LAN and metropolitan-area network (MAN). Customers have no choice of vendor equipment, and multicarrier connectivity is only achieved through provider business relationships.

One of the stated goals of the recently formed Metropolitan Ethernet Forum is to specify the necessary interfaces to support interprovider Ethernet MAN transparency, but the forum has just begun, making it too soon to speculate on a timetable for the implementation of a future specification.

*Pierce is a research fellow at Giga Information Group. She can be reached at lpierce@gigaweb.com.*

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# Carriers fear Foreign Government Ownership Act

Proposed bill would prevent foreign governments from owning more than 25% of a U.S. telecom service provider.

■ **BY GEORGE CHIDI JR.**

The collapsing World Trade Center apparently kicked up old dust from a fight in Congress.

U.S. Sen. Ernest "Fritz" Hollings (D-S.C.), chairman of the Senate telecommunications subcommittee, last month introduced a bill aimed at preventing foreign governments from owning or controlling U.S. telecom service providers. The bill could radically affect some carriers in the U.S.

"This would be a disaster for us if it became law," says Nils Paellmann, a Deutche Telekom investor relations executive. The German government owns 43% of DT. The law would require DT to either divest itself of U.S. wireless operator VoiceStream or for the German government to make a stock offering of about $13 billion in DT shares.

The Foreign Government Ownership Act of 2001 would prohibit a corporation from receiving Federal Communications Commission licenses if a foreign government owns or controls 25% of the company, or if a foreign government exercises any management control.

The bill has gone undetected by many industry watchers because it was introduced the same day the FCC announced it would phase out spectrum cap rules for wireless service providers.

The Foreign Government Ownership Act looks to prevent a continuing flurry of transnational telecom mergers and could affect the operations of some domestic carriers. Mobile phone service provider VoiceStream Wireless was acquired by DT this year, as was satellite service provider GE American Communications by SES Global of Luxembourg.

Hollings specifically mentioned both companies in his comments introducing the bill. ISP and Web site manager Verio was purchased last year by NTT Communications, a subsidiary of Japan's Nippon Telegraph and Telephone.

Hollings started pushing for this law when some of the merger proposals began to emerge. The FCC approved the mergers with waivers justifying the deals in the greater public interest. Hollings' proposal closes the door on FCC waivers for foreign government ownership.

For once, the South Carolina senator sees eye-to-eye with his opposite number in the House, Rep. Billy Tauzin (R-La.), chairman of the House telecommunications subcommittee. Where Hollings has expressed concern about foreign government interests controlling U.S. telecommunication assets, Tauzin has attacked opening U.S. telecom services markets while other countries violate World Trade Organization rules by failing to reciprocate.

The low-profile legislation is operating in a different political climate since the Sept. 11 attacks, says a Hollings spokesman. Although the competitive issues remain paramount in the mind of the senator, the proposal stands a better chance of passing now, presented in the light of national security, he says.

**REGULATORY ROUNDUP**

### Tauzin-Dingell bill may reach vote

There are signs that the Tauzin-Dingell Bill to open long-distance data transport to the big local telecommunication service providers may reach a vote in the House this month.

SBC Communications named William Daley as its new president in November (see related story, page 46). Job One for the former Department of Commerce secretary will be to push for passage of Tauzin-Dingell Bill. SBC spokesman Selim Bingol expressed optimism that the bill would be voted on in December and that Daley's appointment would help its passage.

Spokesmen from three other carriers also say on background that they expect the bill to reach the floor this month. Congressional aides say there has been a greater push to bring the bill to a vote next month, but that its fate ultimately rests with House Speaker Dennis Hastert (R-Ill.).

### Recruiting security researchers

Legislation also emerged in November to establish a new research and development program for computer and network security through the National Institute of Standards and Technology.

U.S. Rep. Brian Baird, (D-Wash.) proposed the Computer Security Enhancement and Research Act of 2001 along with other members of the House science committee. The bill aims to recruit new computer-security researchers in graduate schools in the next 10 years through a $300 million fellowship program.

U.S. Sen. Jim Jeffords (I-Vt.), also introduced legislation asking the FCC to issue a report to Congress outlining the resources needed for development of an effective nationwide communications system for emergency response personnel. Earlier in November, the FCC established an intra-agency council to craft contingency plans addressing a possible attack against the nation's telecommunications infrastructure and to plan for maintaining essential emergency communications.

*Chidi is a correspondent with IDG News Services' Boston bureau.*

www.nwfusion.com

**More online!**

Read why Verizon president and co-CEO Ivan Seidenberg defends the Tauzin-Dingell Bill.

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Special Focus

**CARRIER PROFILE:** Long-distance approval chief objective for new year.

# Qwest looks to build on a tumultuous 2001

**■ BY MICHAEL MARTIN**

The past year has been full of ups and downs for regional Bell operating company and interexchange carrier Qwest Communications.

It began with promise as Qwest raked in record-high revenue for 2000, CEO Joseph Nacchio predicted a new revenue high this year, and the carrier upgraded its national backbone network to an impressive OC-192 (10G bit/sec). But Qwest's fortunes soured along with the market for telecommunications. The company ends the year mired in a sales slump, stung by the layoff of 4,000 workers and still struggling to obtain approval to offer long-distance services in states where it is the incumbent local carrier.

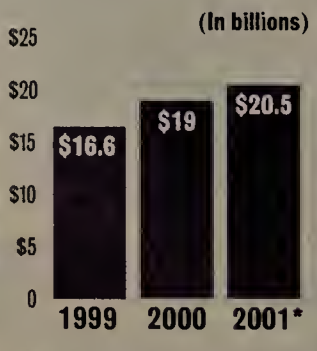
Although Qwest became an RBOC like Verizon, BellSouth and SBC Communications in 2000 when it purchased US West, Qwest brings more to the table than local voice and data services. Qwest's original business was long-distance. The company still maintains a national network and offers long-distance voice and data services to enterprise customers outside the former US West territory. Qwest also offers a suite of Web hosting services. During the past year, the company took steps to improve its offerings in all three areas.

There's little question that one of Qwest's key assets is its IP network.

"They're really the only RBOC with their own national IP backbone," says Courtney Quinn, an analyst with The Yankee Group. "That lets them go up against the other [interexchange carriers] for large business accounts."

## Hanging in

**Qwest's revenue growth will slow this year, but executives say the company should top its 2000 revenue:**



*Projected.

In the IXC market, upgrading its IP backbone network to OC-192 let Qwest offer high-bandwidth services to more enterprise customers, particularly in high-speed hosting. Another milestone was the completion of broadband networks in 25 out-of-region metropolitan areas. Qwest uses these networks to offer businesses a variety of services, including private-line optical services and DSL.

"They've been the most aggressive RBOC as far as out-of-region competition goes, because they're the only one with significant out-of-region assets," Quinn says.

Qwest also was the first RBOC to launch a Gigabit Ethernet service when it rolled out its Dedicated Internet Access portfolio in May. Customers can connect to the Internet at speeds ranging from 2M bit/sec to 1G bit/sec.

Through this service, Qwest uses its own network where possible and in some smaller markets relies on metropolitan rings from Telseon. Customers aren't required to install new equipment. Qwest provides an access multiplexer that connects to a customer's router as part of the package.

Finally, Qwest began moving dense wavelength division multiplexing (DWDM) from its long-haul network out into its local networks. Qwest offers unprotected DWDM services — meaning the service won't fail over if cut, as SONET would — in several markets. Most customers have been financial firms, using less expensive DWDM to replace SONET services, says Teresa Taylor, a Qwest vice president.

In the past year, Qwest made several enhancements to its Web hosting portfolio.

In January, the provider launched e-Solutions, a suite of e-business tools and services ranging from simple Web site design to complex hosting consulting. Later in the year, Qwest added a storage service, letting businesses save data generated by their Qwest-hosted e-business operations.

Perhaps Qwest's most innovative Web hosting service launched this year was its Intelligent Content Environment, a content-delivery service based on gear from Cisco. Through the content-delivery initiative, Qwest offers customers a variety of services, including load-balancing Web servers and content-delivery nodes, which let companies store content closer to those accessing it.

Overall, Quinn says, Qwest's hosting capabilities are impressive, even if Qwest is putting off the addition of more data centers to concentrate on adding customers in existing real estate.

"Their hosting offerings are definitely way ahead of anything the other RBOCs are doing," she says.

While there hasn't been much news on local services, Qwest has been working to get approval to offer long-distance in the 14 states where the company is considered the dominant local carrier. All RBOCs must prove to the Federal Communications Commission that they are offering competitors open access to the RBOCs' networks before the RBOCs can offer long-distance in a state.

But Qwest lags behind its RBOC brethren on this score. Verizon and SBC have won approval in several states to offer long-distance services. BellSouth has applications pending for Georgia and Louisiana.

Qwest officials say the company is on the verge of applying for permission in several states, but time is running out to get an application to the FCC this year.

The fact that Qwest has not won long-distance approval may not necessarily be the provider's fault, Quinn says.

"Part of the problem is the US West geography isn't as inviting to competitors as maybe the Verizon territory and SBC territory," she says. "If no competitors are trying to get into your market, it's hard to prove you're allowing competition to happen."

On the bright side, Quinn notes, there's now little doubt that Qwest's decision to buy US West, which was questioned at the time by industry analysts, turned out to be a big benefit.

"A lot of people scratched their heads when [Qwest] purchased US West, which was often referred to as US Worst," she says. "But that local-services revenue has helped insulate Qwest from the economic downturn."

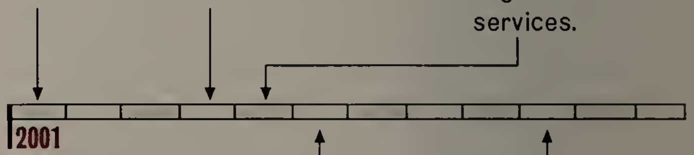
## Bigger and better

**Qwest's milestones this year included:**

**January**
Launched a nationwide OC-192 network.

**April**
Introduced a series of content-delivery services for hosting customers.

**May**
Delivered nationwide, dedicated Internet access Gigabit Ethernet services.



**June**
Completed metropolitan-area broadband networks in 25 out-of-region markets.

**October**
Rolled out improved service-level agreements for dedicated Internet access and VPN customers.

Of course the economic news hasn't been all good for Qwest this year. After recording a solid first half, the company delivered a poorer-than-expected third quarter, with revenue 12% lower than in the second quarter. Qwest's indefeasible rights of use business, which involves the selling of capacity on Qwest's network to other carriers, was particularly hard-hit. During the third quarter, Qwest revised its projected year-end sales figures down from $21.7 billion to $20.5 billion.

While Qwest undertook significant network construction in 2001, 2002 will see the provider concentrate more on adding services and customers.

Qwest's biggest goal in 2002 is to get long-distance approval in all 14 states where it is the local incumbent carrier.

"I can't see any reason why we wouldn't have all 14 by [the end of] 2002," Taylor says.

Qwest hasn't really been hurt by not being able to offer long-distance in its local territories, Taylor says, because the provider has been able to serve enterprise customers with sites in Qwest territory through third-party providers.

"It's painless to the customer because we act as the point of contact and handle the service-level agreements," he says. "But what we need to do in-house on the back end can be painful, so it would be nice to have a single network."

Broadband services will be another area of concentration for Qwest. At some point in the new year, customers should see protected DWDM services that will have the failover ability of SONET and point-to-point Gigabit Ethernet services, Taylor says.

"With the Gigabit Ethernet, our approach this year was to provide it on demand, she says. "Next year we'll move it to general availability."

The one market where Qwest will make significant infrastructure investments is international telecom services.

"Right now we're terminating in Asia and Europe with other providers," Taylor says. "We're paying more, so next year we'd like to be able to do that on our own."

Qwest already has network assets in both regions but needs to light them up, Taylor says. ■

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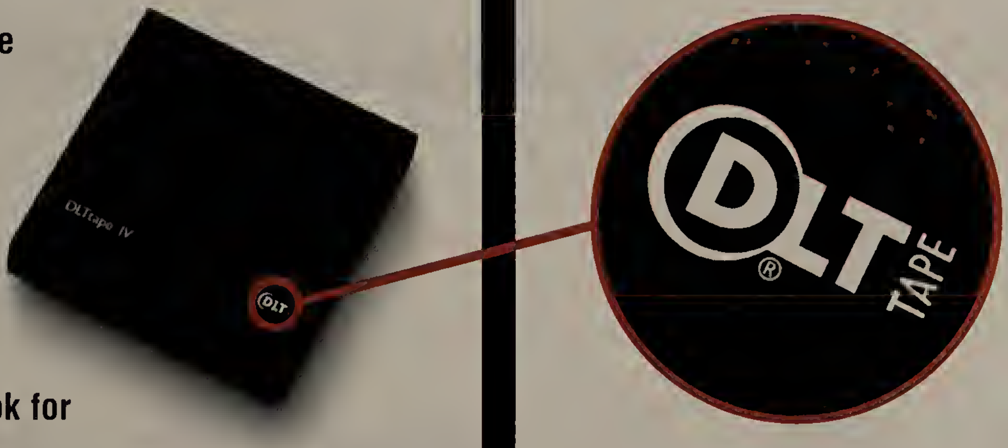

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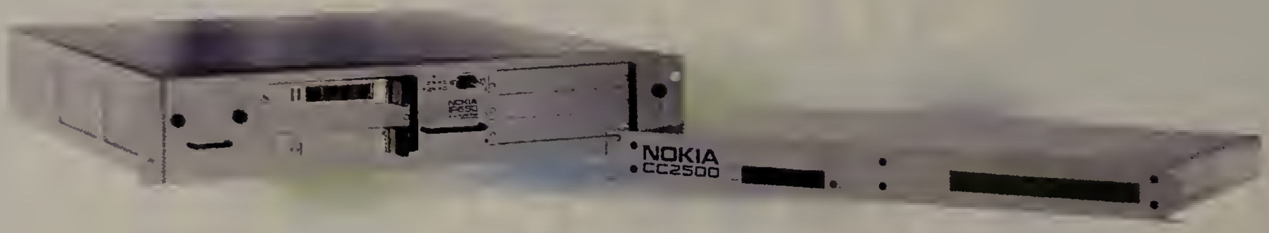

"The Nokia IP530 is truly the best-of-breed platform in the firewall market."
—Information Security Magazine, September 2001

"A formula for earning our Editors' Choice."
—PC Magazine, September 25, 2001

"Easy to install and, more important, easy to restore."
—Network Computing, May 14, 2001

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# The Edge

■ SERVICE PROVIDER DEVELOPMENTS
AT THE JUNCTURE BETWEEN THE ENTERPRISE
AND THE NEW PUBLIC NETWORK

# Which way to future wireless data?

## Operators debate routes to third-generation networks.

■ **BY TERRI GIMPELSON**

Is there a better route to 3G?

There's a debate brewing among some wireless service providers on how best to migrate current infrastructures to support data-oriented 3G services. At the heart of the debate are two migration paths that seek to do the same thing: improve data rates from the current 14.4K bit/sec to 2M bit/sec and higher.

The migration paths are the Code Division Multiple Access (CDMA) 1xrtt standard, which boosts data rates to 144K bit/sec, and the GSM upgrade called General Packet Radio Service (GPRS). GPRS, which is a time division multiple access technology, can run at 171.2K bit/sec when all eight of its time slots are used.

Both CDMA 1xrtt and GPRS are considered interim steps to 3G — typically called 2.5G — because they fall short of the 384K bit/sec support required for any 3G network.

GPRS is deployed in about two-thirds of the countries in the world, and AT&T Wireless and Cingular Wireless are implementing it in the U.S. Meanwhile, 80% to 90% of the wireless coverage in the U.S. is CDMA-based.

Indeed, the debate may be settled along geographical lines unless a groundswell of compelling applications tips the scales toward one technology over the other.

"All that really matters is what these guys are doing with services," says Larry Swasey, an independent wireless analyst. "Depending on what the subscriber wants, either technology could be fine."

Tom Crook, director of technology research at Sprint, says the company chose to be bullish on CDMA in 1995 because of the value the technology showed in migration to 3G.

"If it's CDMA [1xrtt] or WCDMA, it's still all based on CDMA," he says. "By choosing to go CDMA, we chose to evolve ourselves in an efficient manner to 3G."

Wideband CDMA offers data rates of 384K bit/sec. It is planned for implementation in 2003. Its counterpart in the GSM/GPRS world is Universal Mobile Telecommunications Service.

In addition to the extensive coverage in the U.S., CDMA is supported in South Korea, Japan and China, Crook says. Crook says getting to 3G via the GPRS route would be too disruptive.

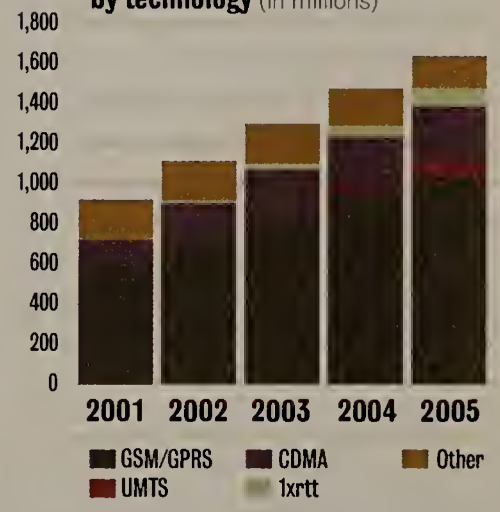
"In order for us to achieve the higher data rates of 144K bit/sec peak with 1xrtt, all we have to do is go into the base station and plug in a card," he says. "In addi-

See Wireless, page 40

### No strings attached

**UMTS and CDMA are projected to be the mobile wireless technology leaders in subscriber growth by 2005.**

**Mobile wireless subscribers by technology** (in millions)



SOURCES EMT DATABASE, IDC, PYRAMID, STRATEGIS AND INVESTMENT BANKERS

## Short Takes

■ Start-up **Packet Design** has received a multimillion-dollar investment from **Sun.** The investment is Packet Design's first from a corporate source. The company previously raised $24 million from Foundation Capital and several individual investors. Packet Design, founded in June 2000, is developing Internet infrastructure technologies to address mobility, security, routing performance and network scalability. It licenses the technologies at the prototype stage or spins off separate companies to develop and market products. www.packetdesign.com; www.sun.com

■ **Avici Systems** has announced completion of separate interoperability tests of its **Multi-protocol Label Switching** (MPLS) software. The tests were conducted at Isocore and the European Advanced Networking Test Center. They focused on demonstrating vendor interoperability for the provisioning of MPLS VPNs and MPLS traffic engineering. The tests included network equipment from Alcatel, Cisco, Data Connection, Ericsson, Foundry Networks, Marconi, Nortel, Riverstone Networks and Unisphere Networks. www.avici.com

# Company keeps score on network growth

■ **BY TERRI GIMPELSON**

HENDON, VA. — ScoreBoard, a developer of monitoring and planning software for mobile networks, has announced the availability of an enhancement designed to help operators manage the growth of their networks.

Scoreboard's Growth Management software is for operators designing and planning new cell sites. It performs predictive modeling and generates a graphical picture that illustrates where additional coverage might be needed. The information can then be plugged into the company's suite of network analysis applications — also called ScoreBoard — to determine what effects nearby sites may have on a potential site, and vice versa.

ScoreBoard says the program also helps maximize network capacity and improves the quality of existing cell sites. The module generates modeled data into the ScoreBoard analysis program to enable "what-if" planning. The modeled data includes measured effects of radio frequency signals from other cell sites in the network, antenna types and local terrain effects. It also takes into account tower height and placement.

Once data is collected, an analysis algorithm is applied and a ScoreBook is generated, similar to a report card. The ScoreBook contains "scores" of an operator's system that identify holes and problems. The ScoreBook also provides a list of prioritized recommendations, such as channel assignment.

The program operates under the application service provider model, ScoreBoard says, where the company hosts the application in a secured facility. Operators obtain a secure Internet connection to the site via a licensing contract with ScoreBoard, and then present submissions to ScoreBoard based on what part of the network they want analyzed.

Monthly submissions can differ in number and scope, depending on the size of the operator's market, ScoreBoard says.

Currently the product is available only for GSM-based networks, a decision ScoreBoard says it made based on GSM's global market share. The company says it is optimized for Enhanced Data Rates for Global Evolution implementations expected in 2002. ScoreBoard developed a patented prototype for use in Code Division Multiple Access networks that will be released in 2002.

Christine Loredo, senior analyst of mobile wireless research for Strategis Group, says the new Growth Management module brings the company up to speed with competitors such as CellPlan, Marconi and Agilent Technologies.

However, Loredo says ScoreBoard still has a few obstacles to overcome.

"ScoreBoard has a smaller market share than these other companies, just under 5%," she says. "The market has also stalled because of the economy, but we anticipate that picking up by the end of 2002 and into 2003."

ScoreBoard: www.scoreboardinc.com

www.nwfusion.com

**More online!**

Read a column about what today's wireless industry could learn from Herbert Hoover.

**DocFinder:** 7231

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# Cisco clarifies optical strategy

■ **BY JIM DUFFY**

Cisco last week sought to clarify its optical networking strategy in light of varying degrees of success — and failure — in different segments of the market.

The company announced its Complete Optical Multiservice Edge and Transport (COMET) program. COMET wraps all of Cisco's metropolitan and long-haul optical platforms together into tools service providers use to attempt to provision services profitably.

For some analysts, COMET helps clarify Cisco's intentions to be an end-to-end supplier of optical networking gear. That commitment came into question during the past year as Cisco realized profound success in metropolitan optical, while its long-haul transport systems have been received less enthusiastically. Cisco also discontinued its core optical cross-connect.

"It wasn't clear to me how committed they were to an end-to-end optical strategy," says Sterling Perrin, an analyst at market research firm IDC. "This is an explanation of where they stand in optical and what their overall strategy is. They do fully intend to be an end-to-end player."

To help convince skeptics, Cisco rolled out the ONS 15808, a long-haul and extended long-haul dense wavelength division multiplexer (DWDM) transport system. The 15808 supports 80 OC-192 channels at 50-GHz spacing. It is designed to scale beyond 300 channels, Cisco says.

Cisco's highest-capacity long-haul transport system had been the ONS 15800, which supports 64 10G bit/sec channels by amplifying both the C band and the L band of the fiber.

For long haul, the 15808 can span distances of more than 370 miles without regeneration. For extended long haul, the system can extend to 1,240 miles without regeneration, Cisco says. It features erbium doped fiber amplifiers and Raman amplifiers for long-haul and extended long-haul applications, respectively.

In addition to 10G bit/sec OC-192 wavelengths, the 15808 supports 2.5G bit/sec OC-48, and is designed to be able to support 40G bit/sec OC-768, Cisco says. The system also performs optical add/drop multiplexing, which enables channels to be dropped off at destinations along the route instead of backhauling them to an end terminal and hairpinning those channels back to where they're intended to go.

Lastly, the 15808 supports out-of-band forward error correction (FEC), which helps overcome bit errors introduced by dispersion and attenuation.

Velocita, an upstart carrier that Cisco has backed with $500 million, is using the 15808. Overall, Cisco has 29 customers for its 15800 series platforms.

Cisco will need all of that. Of the 13 vendors that comprise the overall DWDM market — long-haul and metropolitan — Cisco ranks No. 9, according to Dell'Oro Group. That market declined from $2.4 billion in the fourth quarter of 2000 to less than $1.5 billion in the third quarter of this year, and Dell'Oro expects it to decline for the next two quarters.

James Richardson, Cisco's chief marketing officer, acknowledged that the long-haul optical market was "very challenging" at the UBS Warburg telecom conference in New York a month ago. Analyst Perrin agrees.

"Long-haul is going to be their biggest challenge going forward" in optical networking, he says. "The 15808 is on par with what's out there today" instead of leapfrogging systems from Lucent, Alcatel, Nortel and Ciena, Perrin says.

## For the long haul

**Features of Cisco's ONS 15808 DWDM transport system include:**

- 80-channel OC-192 at 50 GHz, with growth beyond 300 channels.
- Out-of-band forward error correction.
- Hybrid EDFA/Raman amplification.
- 2.5G and 10G wavelengths, with growth to 40G.
- Add/drop muxing.
- Long-haul and extended long-haul applications, minimal signal regeneration.

Cisco has been more successful in metropolitan optical, specifically with its ONS 15454 SONET/SDH multiplexer. Cisco last week added resiliency and capacity enhancements to this platform.

The 15454 now supports Path Protected Mesh Network and four-fiber bi-directional line switched ring topologies; and a larger matrix of Synchronous Transport Signal-1 time slots to fill up its recently announced OC-192 links (www.nwfusion.com, DocFinder: 7226). Cisco also announced that Williams Communications is using the 15454 to offer metropolitan private line services and that customers for the platform now total 700.

On the metropolitan DWDM side, Cisco says storage vendors have certified four of its ONS platforms as interoperable with their storage equipment, and that the OPNS 15200 in particular has gained Fibre Channel support.

The COMET rollout overall was "good," Perrin says, but there are still some holes. Cisco needs to fill the gap left with the discontinuation of the ONS 15900 Wavelength Router, which was killed because of lack of market demand (www.nwfusion.com, DocFinder: 7227).

"The biggest issues are with the optical cross-connect space. It's clear to me that it's important to them and they need to compete in that space" with both electrical and photonic switching, Perrin says. ■

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## Wireless

continued from page 39

tion, the next 3G 1X release around 2003 will only require us to perform a software upgrade. Those GSM/GPRS network operators will have to turn up new frequencies, another 10 MHz of spectrum just to maintain the customers they've got while they perform the upgrade."

That's not enough to dissuade Cingular. The carrier's decision to go the GSM/GPRS route is based on market share, says Chris Rinne, vice president of technology and product realization for the carrier.

And Rinne disputes allegations that it will be the more expensive way to get to 3G.

"Five hundred million-plus use GSM technology globally," he says. "That's a 70% market share. Couple that with the lower equipment costs, lower handset costs and spectral efficiency, [and] GSM has the better advantage."

Rinne says CDMA networks will also face multifaceted upgrades to get to 3G, even if 3G happens to be based on CDMA technology.

"There are going to be multiple steps with each type of network," he says. "CDMA networks will have 1xrtt upgrades and similar upgrades beyond that."

But the technology question turns out to be moot because the payback comes from the applications and services on those networks, no matter what they're based on, vendors say. Motorola and Ericsson support both technologies.

"You can really do the same types of services with either technology," says Lars Nilsson, general manager for Ericsson. "The decision really comes down to what carriers are offering in terms of bundled services and what kind of global roaming capability you are looking for."

Analyst Swasey concurs.

"It's really just a value judgment," he says. "It depends on where you are and what you're looking for as an end user." ■

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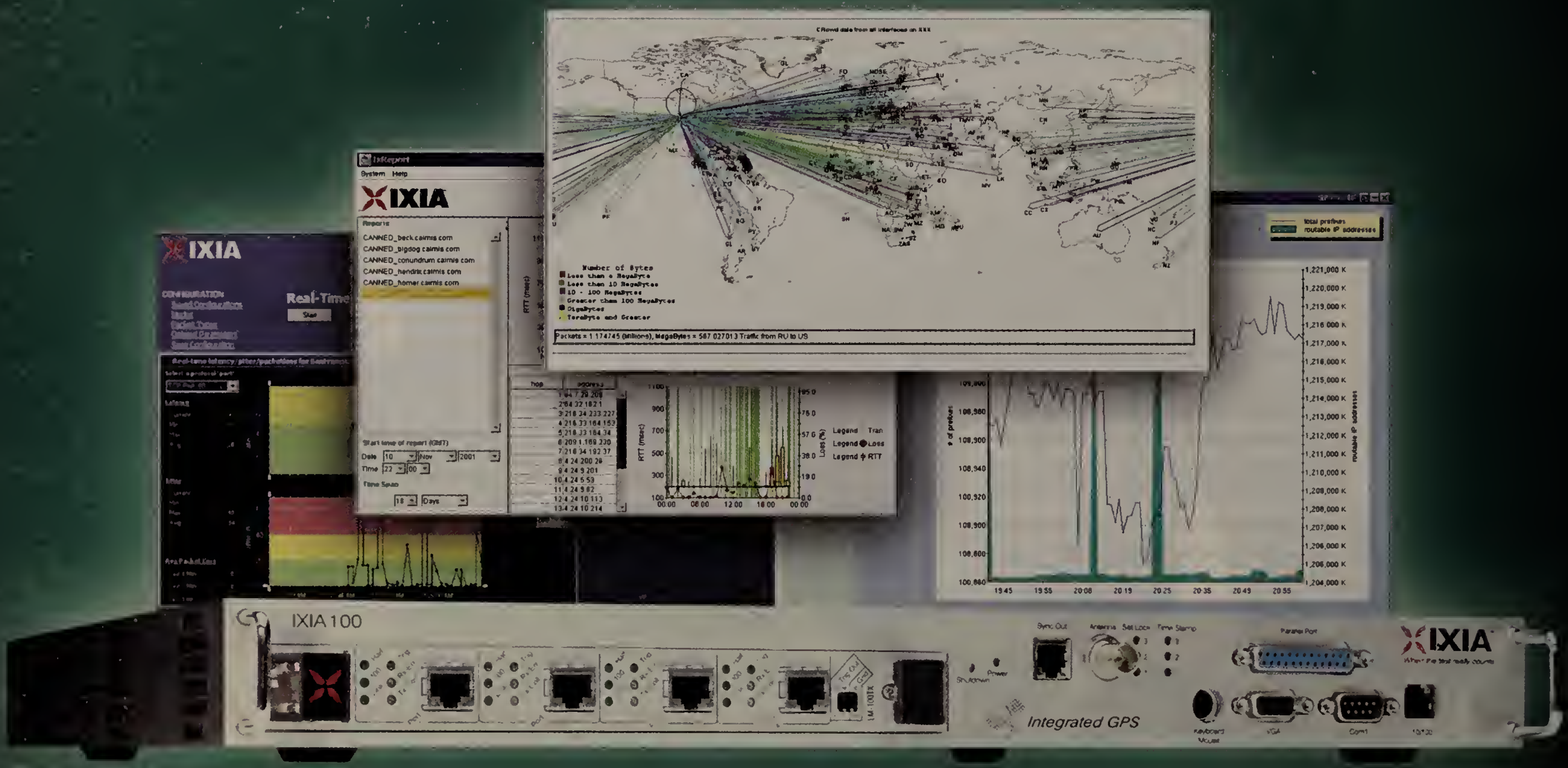

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# Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

# Ethernet over copper for broadband

■ **BY MACIEJ KRANZ**

The IEEE 802.3ah subcommittee is developing a standard for Ethernet over voice-grade copper. Dubbed the Ethernet in the First Mile subcommittee, it has made great advances toward its goal of securing a standard for 10M bit/sec service over at least 2,500 feet of copper wire. The group expects to publish a final standard in 2004.

Long-Reach Ethernet (LRE) is an early example of this technology. LRE extends Ethernet by utilizing unconditioned, twisted-pair copper telephone wiring.

LRE uses frequency-division duplexing to separate the downstream channel, the upstream channel, and plain old telephone service (POTS), ISDN or PBX signaling services. This enables the overlay of LRE on existing POTS, ISDN or PBX signaling services without disruption. LRE and POTS/ISDN/PBX services may then be transmitted over the same line without interfering with each other.

LRE provides full-duplex transmission at tremendous speeds and distances:

- 15M bit/sec symmetric rate (up to 3,200 feet).
- 10M bit/sec symmetric rate (up to 4,000 feet).
- 5M bit/sec symmetric rate (up to 5,000 feet).

Because of these advances in speed and distance, a host of new value-added broadband services can be offered, including:

- Broadband Internet connectivity for business travelers, office workers and home users.
- IP telephony, which lets remote users interact and collaborate in real time.
- Converged video/voice/data applications, such as video-on-demand, videoconferencing and e-learning.
- Secure, high-speed network access through the addition of VPNs.

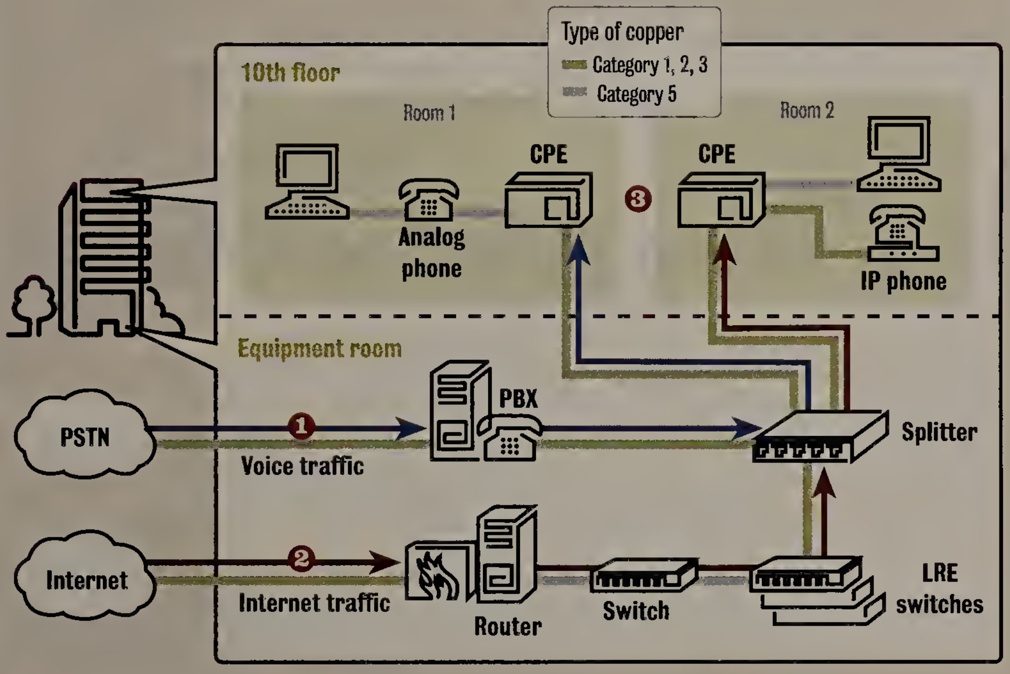
For most implementations, three devices are required to effectively deliver LRE to users — an LRE switch, LRE customer premises equipment (CPE) and a POTS splitter.

LRE switches condition incoming and outgoing Ethernet packets so they can run over standard copper wiring. Otherwise, they act much as traditional Ethernet switches — directing, storing and forwarding packets, as well as matching destination and source addresses together into virtual channels. LRE switching units simply need to be installed in a building basement, along with the telephone equipment, using 10/100M bit/sec or 1000Base-T to uplink to the Internet router and/or local servers. 10/100 switch ports also can be used to daisy-chain multiple LRE switches.

■ **HOW IT WORKS**

### Ethernet over Category 1, 2, 3 copper

**Ethernet over telephone-grade copper provides broadband services to multitenant buildings.**



① In the equipment room of a multitenant building, PSTN voice traffic goes through the PBX, then to a service splitter.

② Internet traffic comes in through a router, then is switched to the splitter, which sends Long-Reach Ethernet traffic to the consumer premise device (CPE) in each office over Category 1, 2, 3 cabling.

③ In-room CPE devices split Long-Reach Ethernet and splitter traffic, letting users leverage broadband connections with no rewiring.

Each LRE port is terminated in the room with a CPE device. The device splits LRE and POTS traffic, converting the LRE traffic into Ethernet traffic — and vice versa. This provides Ethernet access to the LRE signals that are on the telephone wire, without interfering with the service already in place.

A POTS splitter lets LRE and POTS coexist on the same telephone line. It is necessary for deployments in which the PBX system is on-site and POTS traffic must coexist over the same copper wiring as LRE traffic.

Together, these components of LRE provide a robust broadband solution that is:

- Low-cost — Building owners do not need to rewire their buildings to achieve remarkable increases in available bandwidth.
- High-speed — LRE delivers bandwidth of up to 15M bit/sec.
- Extremely functional — LRE supports a range of broadband capabilities.
- LRE changes the economics of broadband provisioning by providing a cost-effective solution that preserves the existing communications infrastructure of multiunit buildings and enterprise campus customers.

*Kranz is director of marketing for the desktop switching business unit at Cisco. He can be reached at mkranz@cisco.com.*

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## Ask Dr. Internet

By Steve Blass

**We have Novell 5.1 Service Pack 3 drive mapping problems similar to those described in your Nov. 19 column. We noticed some differences. We can map to servers on my local segment (three total), but mapping to two servers across a T-1 can take 5 minutes before a map connection is made. We also found that on a Windows 2000 PC, if you try to cancel the task of mapping it hangs the PC.**

We received other suggestions, ranging from repeatedly choosing 'Fail' when presented with the 'Abort, Retry, Fail' access error prompt; to specifying the exact LAN frame type, protocol, speed and duplex setting instead of using Windows autodetection. Other tips were to upgrade the Novell TCP/IP stack to the latest beta-test version, currently tcp553l, (see www.nwfusion.com, DocFinder: 7228) or ask for help from the Novell support forums (see www.nwfusion.com, DocFinder: 7229). Checking in with the '5.x Install/Upgrade Forum' under 'Operating System->Server->NetWare 5.x' produced a list of patches being recommended for NetWare 5.1 SP3, including updates for Timesync, NDS, TCP/IP and Winsock. The product support page (see www.nwfusion.com, DocFinder: 7230) lists all the released 'Related Files and Patches' for NetWare 5.1 and includes a link to the beta patches page where you can find the latest TCP/IP update.

**Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.**

GEARHEAD
INSIDE THE NETWORK MACHINE
Mark Gibbs

# Pringles, satellites and shortening

First, a message from reader Hank Stephens chastising us regarding the Gearhead column "More distance, less Pringles" (www.nwfusion.com, DocFinder: 7225):

"Are you aware that the Federal Communications Commission regulates the radio/antenna combinations that can be used in the unlicensed portion of the 2.4-GHz spectrum? Every access point and radio vendor has a list of antennas that are approved by the FCC for use with their radios. Your Pringles can antenna is very unlikely to be on anyone's list of approved antennas. It seems odd that you would publicly suggest such a solution. For an excellent summary, see http://shorterlink.com/?RFGCL7."

Stephens is wrong on one point but quite correct on two other counts. The wrong point was that it was not "our" Pringles can antenna — it was the creation of one Andrew Clapp (see http://shorterlink.com/?62KLD9 for Clapp's creation and see http://shorterlink.com/?TIBX8Q for the original page we cited).

But on the other points: Yep, Pringles can antennas are definitely not on anyone's list of approved antennas (we weren't aware of the finer points of the relevant FCC rules — we wonder how many 802.11b sites are in violation?), and the Cisco antenna summary is terrific! A "must read" if you are getting into wireless networking.

By the way, Clapp's Web site points enthusiastically to an applet we saw ages ago and forgot about. The site the applet is on is Liftoff (a NASA property at http://shorterlink.com/?4RX2K8), and the applet is J-Track 3D(http://shorterlink.com/?2QNER2), which plots the orbits of satellites in real and speeded-up time.

And there's also J-Track 2.5 (see http://shorterlink.com/?AS1DAJ), which plots the same space hardware but overlaid on a two-dimensional Mercator Projection(http://shorterlinkcom/WZGGEH) map of Earth. Way cool.

Notice our use of shorterlink.com instead of impossibly long URLs. This is a neat idea. You can go to shorterlink.com, give it a target URL and shorterlink.com enters the real URL in a database and gives you back a URL that is the ID for the database entry.

You now have a URL that is much shorter than the original, which makes it easy to use in situations such as e-mail messages, where long URLs often get "broken" by line wrapping.

So when you enter the new URL, the tail of the URL (the characters after the "?") are fielded by a CGI script that does a database lookup, retrieves the original URL and creates a dynamically generated HTTP redirection page. As my young son would say, "Sweet."

So with Shorterlink references being constructed from a character string of six base 36 values, we have a total of 36 to the sixth index entries — that works out to 2,176,782,336 references.

Ah! But how big could the database become? Well, the maximum length of a URL in Internet Explorer is 2,083 characters (considerably longer than most servers support) so we'll assume a maximum supported URL length of 512 bytes, thus 2,176,782,336 times 512 equals 1,114,512,556,032 bytes, or just over 1 terabyte. Not bad.

As an aside, we should point out that 1,024 terabytes equals one petabyte, which, times 1,024 equals one exabyte, which times 1,024 equals one zettabyte, which, times 1,024 equals one yottabyte. Of course, things could be more complicated, at least if the International Electrotechnical Commission 1998 standard for naming binary multiples becomes accepted (see http://shorterlink.com/?16ZREM).

An interesting aspect of the design of shorterlink.com is that if you enter a long URL twice you'll get two different Shorterlink URLs! We suspect that there's a really horribly simple script underlying the shorterlink.com service.

An alternative link-crunching service is http://makeashorterlink.com, an altogether slicker production.

Of course, should a link-shortening service ever stop working, a lot of people are going to be seriously inconvenienced. So what we need is a global, collaborative, distributed link-squashing service. We think it should be called the Short URL Environment, or SURLE (pronounced "surly").

But this would be a hugely challenging design problem, and would it be worth it? Perhaps what we need is a link-shortening service on every Web server. This would ensure that all shortened links (s-links?) were actually maintained. *Network World's* Web site has something conceptually similar with the DocFinder system. Any one out there have any ideas on how we should build S-linky?

*Brilliant ideas to gearhead@gibbs.com.*

---

KEITH SHAW
Lord of the Things

Cool Tools
Quick takes on high-tech toys

# More Yule Tools to put under the tree

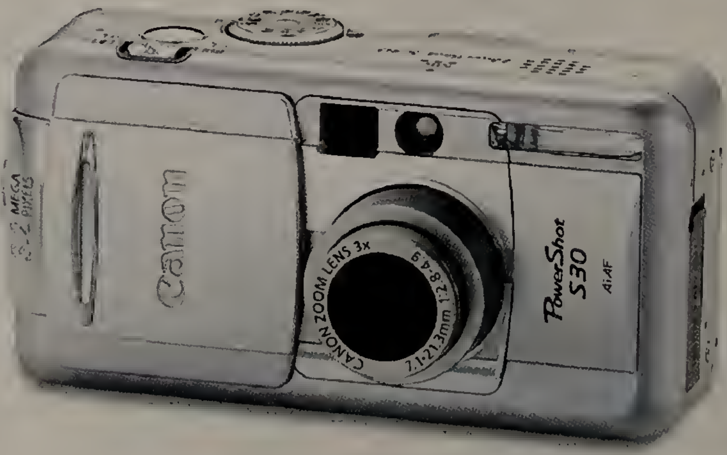
Here's a roundup of some stuff that didn't make it in time for the publication of our Cool Yule Tools gift guide but are still good enough gifts for your favorite techie:

**Belkin's Nostromo n30 GameMouse; $46:** This force-feedback mouse has a base that makes it more stable, perfect for the gamer on your list. It works well with the n50 GamePad, also by Belkin. But it's also good for normal, everyday mousing, giving you a little kick when you roll over a link or other button. It also has a good ergonomic design. Go to www.belkin.com for more details.

**Belkin's n30 GameMouse gives force feedback.**

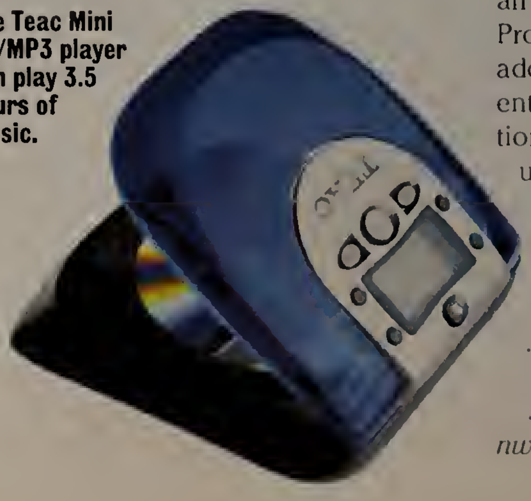
**Canon PowerShot S30 digital camera; $600:** A very nice and compact 3.2-megapixel digital camera, this model (and the Canon S40) can print directly to a Canon CP-10 printer and the soon-to-be-released S280 bubble-jet printer. This is a neat way of printing photos without having to download them to a computer. This camera produced some great photos. My only gripe is that the included software didn't have a very good photo editor.

**Terapin CD Audio Video Recorder; $500:** A versatile device that lets you record audio or video tracks from several sources onto a CD-R or CD-RW disc. If you don't want to wait for DVD recorders to come down in price, this is a pretty decent and relatively inexpensive alternative. With this device, you can transfer videotapes onto disc, record from TV, VCR or a camcorder. If you've got a bunch of old TV shows sitting on videotape, this can be an easy way to transfer them onto a CD. You can also hook up to a CD player and transfer your CDs onto the CD-R or CD-RW disc. Go to www.goterapin.com for more information.



**The Canon S30 takes great pictures and can print directly to a Canon CP-10 printer.**

**Teac Mini CD/MP3 Player; $130:** A very small CD/MP3 player that plays miniature CD-R music discs, which can hold up to 3.5 hours of MP3 files (185M bytes) on one disc if you burn them as MP3 files (normal burns save files as WAV so they can be played on a normal CD player). But this player plays both the CD (WAV file) and MP3 format. With the MP3 files played, you get the full 3.5 hours on the minidisc. The player also comes with headphones, an AC adapter (it can also run on two AA batteries) and MusicMatch software. Go to www.shopteac.com to get one.



**The Teac Mini CD/MP3 player can play 3.5 hours of music.**

**Siemens S40 triband GSM mobile phone; $329:** Another small wonder, the S40 phone is sleek and stylish. The triband functionality lets you use the phone in the U.S. and overseas on any GSM network. The phone weighs only 3.4 ounces and features an integrated internal antenna. Other features include an integrated Wireless Application Protocol browser, a voice recorder, an address book that holds up to 1,000 entries, Microsoft Outlook synchronization, up to 260 hours of standby time or up to six hours of talk time, and "Intelligent Typing" with T9 technology for faster messaging. Cingular Wireless is the first carrier to sell the S40, and you can buy it at www.icm.siemens.com.

*Send news of cool stuff to kshaw@nww.com.*

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**EDITORIAL**

Tim Greene

# SBC gets a Daley dose

What does William Daley know about telecom? Enough to get hired as the new president of SBC Communications, the $131 billion telecom giant that sells local phone service in California, Texas, Illinois and 10 other states, along with owning a controlling share of Cingular Wireless.

Just from looking at Daley's résumé, you would not pick him to be the top choice for such a post. His most recent job was running Al Gore's presidential campaign, and before that he was U.S. Secretary of Commerce and served as Bill Clinton's special counsel, championing the North American Free Trade Agreement.

On a personal note, he is the brother of Chicago mayor Richard Daley and the son of the former Chicago mayor Richard Daley. All in all, he has broad and deep political experience. Impressive, but not enough to be president of a company that ranks 14th on the Fortune 500.

Why SBC CEO Ed Whiteacre would tap him becomes less confusing when you look at what he is actually being called on to do. He is in charge of SBC's strategic planning, regulatory matters, governmental initiatives, external affairs and international affairs. So he won't be deciding whether to use an ATM or a Multi-protocol Label Switching backbone on the SBC core network.

When you strip back all the verbiage, what he will be doing is what he has proven good at: lobbying.

SBC desperately wants Congress to pass legislation known as the Tauzin-Dingell Bill to lighten restrictions on SBC and the other regional Bell operating companies. The bill would deregulate DSL services and remove the requirement for RBOCs to sell competitors the network elements they need to sell competing DSL services. It would also let RBOCs sell long-distance data services in their home regions before there is local competition.

If passed, this legislation would effectively undo many of the key elements of the Telecommunications Act of 1996. It would let the RBOCs reap the benefits the law promises without delivering all the reforms the law requires. The principal gain from the law was to have lower prices based on competition.

The Tauzin-Dingell Bill is having a tough time in Congress, getting a mediocre review by a House committee. If it is not already too late to save it, it certainly needs help. Daley may have just the skills needed to win the day.

If he succeeds, it will be another nail in the coffin of competition just as broadband DSL access becomes more popular.

— Tim Greene
Senior editor
*tgreene@nww.com*

# opinions!

## Not a done deal

In Thomas Nolle's column "Networking's 900-pound gorilla" (www.nwfusion.com, DocFinder: 7145) he provides some interesting reasons as to why the regional Bell operating companies have an advantage in the local and interexchange carrier marketplaces. The problem arises when Nolle plays soothsayer in his prediction that a deal will happen between WorldCom and Verizon.

What Nolle neglects to mention is that Verizon already owns 9.5% of Genuity's network infrastructure as a result of its merger with GTE. Verizon also has the option to increase the ownership to as much as 80% if it gains long-distance entry in the Bell Atlantic states within five years. Given the fact that Genuity's Global Network Infrastructure is a high-capacity network that has 17,500 miles and a presence in 100 cities in the U.S. as well as connections abroad, why would Verizon look at WorldCom?

Verizon spent billions in the merger with GTE to own part of a quality long-haul network like Genuity's. I fail to see the financial incentive for Verizon to spend additional billions to acquire WorldCom and then integrate the two networks.

Michael Staufenberg
Senior analyst
Communications Industry Researchers
Charlottesville, Va.

*Nolle replies: You present an IP- and technology-centric view of the issue, which I contend is not appropriate to market reality. WorldCom has customers that Verizon could acquire with a merger and must compete for without one. Long-haul infrastructure in this day of declining bandwidth cost isn't much of an asset.*

*E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.*

## The implications of making do

Regarding Mark Gibbs' "Backspin" column "Doing more with what you have" (www.nwfusion.com, DocFinder: 7146), I've never had a problem making do with what I have — even when it makes tasks more cumbersome.

My difficulty has always been making upper management understand the implications of making do. Management will say we need this to be faster, need this to be more reliable, need to be able to grow quickly. I can't reoptimize Windows to make it more efficient. I can't make Windows 98 more reliable; I can upgrade PCs to Windows 2000, but that costs money. I can't be ready for fast growth without purchasing quality performing switches, having extra ports on hand and workstations ready to image and rollout.

I'll do my job within whatever limitations I need to deal with, but paint me into too tight of a budgetary corner and you severely limit my ability to maintain a growing, stable environment.

Aaron Hickmann
Manager, IS
Lynx Photonic Networks
Calabasas Hills, Calif.

## Standards lag

Regarding "Standards work should reinforce VPNs" (www.nwfusion.com, DocFinder: 7147), given the slow state of advancement in retail VPN products and services, it would be helpful to give readers an idea of when we can expect some of these standards to take effect. Too often there is a lot of good effort but results do not appear until years later. That makes the business community very skeptical in accepting vendor claims that comprehensive security is just around the corner.

Kostas Dimitriou
Sunrise, Fla.

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**ETHERNET SERVICES**

Robert Love

# Ask your carrier to support RPR

The technology exists today to deliver Ethernet services to companies over WANs and metropolitan-area networks. But these services aren't readily available because corporate IT managers aren't making their voices heard. Corporations are spending a lot of money on frame relay, ATM and private-line connections, but that same investment could deliver more than 10 times the bandwidth — for the same cost

Most companies use Ethernet LANs. To get LAN data across town or across the country requires the addition of multiple protocols and more transmission equipment. All this equals time, cost and headache for IT managers who require WAN and MAN services. To add insult to injury, the bandwidth available with these services forces IT managers to restrict the applications they run over their WANs and MANs.

Progressive carriers are developing infrastructure to support Ethernet WAN and MAN services. To gain access to bandwidth from 1M bit/sec to 1G bit/sec, you need only plug your existing router or L3 switch into an Ethernet service port that these carriers offer. However, pure Ethernet lacks the quality of service (QoS), resiliency and service-level agreement (SLA) capabilities required of a carrier protocol. And there's another catch. Most carriers are not actively promoting these Ethernet services for several reasons, including: aversion to disrupting current revenue streams; lack of knowledge of how to sell and provision these services; uncertainty about the popularity of Ethernet services; and lack of a standardized technology that delivers this capability.

These roadblocks are being cleared. With the introduction of Resilient Packet Ring (RPR) technology, carriers can offer Ethernet services that behave like SONET and ATM. RPR, a new media access control layer protocol that is being developed and standardized within the IEEE 802.17 working group, has been optimized specifically for metropolitan-area networking. It carries voice and time-division multiplexed traffic with the QoS and resiliency of SONET and Ethernet traffic with the efficiency of native Ethernet. It makes efficient use of shared metropolitan fiber rings and provides the granularity to let users purchase the bandwidth they need, when they need it, in small increments. Best of all, it lets voice and data traffic be transported and managed in a unified way. RPR lets carriers lower their equipment costs and deploy more services on the same infrastructure. As such, RPR lowers operating costs for carriers and users.

It's up to you to help your carrier partners understand your needs. A connection with guaranteed SLAs, QoS and more bandwidth that lowers enterprise WAN and MAN management costs and doesn't require new customer premises equipment is a winning combination. Ask your carrier for it. Better yet, tell your service provider you're going to get it, and you hope that you don't need to look elsewhere.

*Love is chairman of the RPR Alliance and president of LAN Connect Consultants. He can be reached at rdlove@ieee.org.*

**It is up to you to help your carrier partners understand your needs.**

---

**YANKEE INGENUITY**

Howard Anderson

# Where did that $2 trillion go?

A few weeks ago, I dropped into John McQuillan's Next Generation Network Conference. Half the attendees were wondering where they would be working next year; the other half were venture capitalists hoping to discover where to invest next.

We communications industry venture capitalists ought to be the happiest sons of guns in the world. Even after the tech downturn, society genuflects to us, government adores our ability to create jobs, and the media continue to kiss us. Our investments in communications and equipment companies have ensured that we drive more Porsches and Testarossas than the all the world's rock stars put together. In short, we used to think we were blessed by God and were masters of the universe. Until this year.

McQuillan proposed that technology advances be damned, there was just too much fiber and technology capacity and not enough demand, that Internet growth has slowed to 50% per year and all those communications start-ups couldn't possibly have succeeded. We all knew it. Covad Communications? Dead. Rhythms NetConnections? Dead. Winstar Communications? Dead. Niedermeyer? Dead.

Two years ago, there were 300 competitive local exchange carriers, each with a black belt in spending; now there are only 75 left standing. Junk bond money was cheap and abundant; now it's nonexistent. Further, the lofty stock prices of the industry are a thing of the past.

Of course McQuillan has a point. But communications is where we venture capitalists have made money in the past, so we get enamored of all things optical even if we know that maybe 5% of the 420 optical-component companies we have funded might make it. And when buyers such as JDS Uniphase tank, who's going to bail out our investments? We are like one-trick ponies, waiting mournfully for the wonder days of yesteryear to return. Let's face it: We're all in denial.

We have raised larger and larger funds to invest in communications, and we secretly know we are largely responsible for the downturn of the communications sector, the stock market and probably the entire economy. But taking that blame isn't something we do. Are we really sophomoric, testosterone-laden, overpaid ego cases for whom no amount of prestige, power and accomplishment is enough? Yep. We have a love-hate relationship with just about everyone. We regard the investment bankers as sycophantic bloodsuckers — until we need them. Communications analysts are crybabies who have to realize that their place in life is to hype the bejesus out of our investments. And for years, they did, and the unholy alliance of communications industry venture capitalists and greedy investment bankers worked. Then the world blew up.

The loss of market capitalization for the top 10 companies in the communications sector this year is $1.346 trillion. Add in the rest of the companies in the sector and it's more than $2 trillion. The whole damn U.S. economy is only $11 trillion! No wonder McQuillan and we venture capitalists are sweating bullets. Who is going to come to his conferences, and who will buy our investments, if this is the prognosis for the industry? Dave Passmore, who co-chaired the conference, was more optimistic — except his heart wasn't in it. He said optical nets will change everything; that bandwidth will be so affordable and available that we'll backhaul and install dumb networks because now computing cycles are more expensive than bandwidth. Dave sounded like a destitute farmer looking for a crop loan.

Meanwhile we venture capitalists know all about the coming "breakthroughs" — and we're still scared witless. Those overpriced stocks represented companies put on earth to buy out our communications investments at stratospheric prices. We used to take our mistakes public; when all else failed, we could sell our second-tier companies to the Europeans (Alcatel, Marconi, Siemens) at wildly inflated valuations.

Frankly, we don't know whether to spit or go blind. We love technology, but reality keeps intruding. Our best bet: Hunker down and hope that this excess capacity is a short three-year problem. And if you spot where that $2 trillion is, let me know.

*Anderson is senior managing director of YankeeTek Ventures, a venture incubator in Cambridge, Mass. He can be reached at handerson@yankeetek.com.*

**We are like one-trick ponies, waiting mournfully for the wonder days of yesteryear to return. Let's face it: We all are in denial.**

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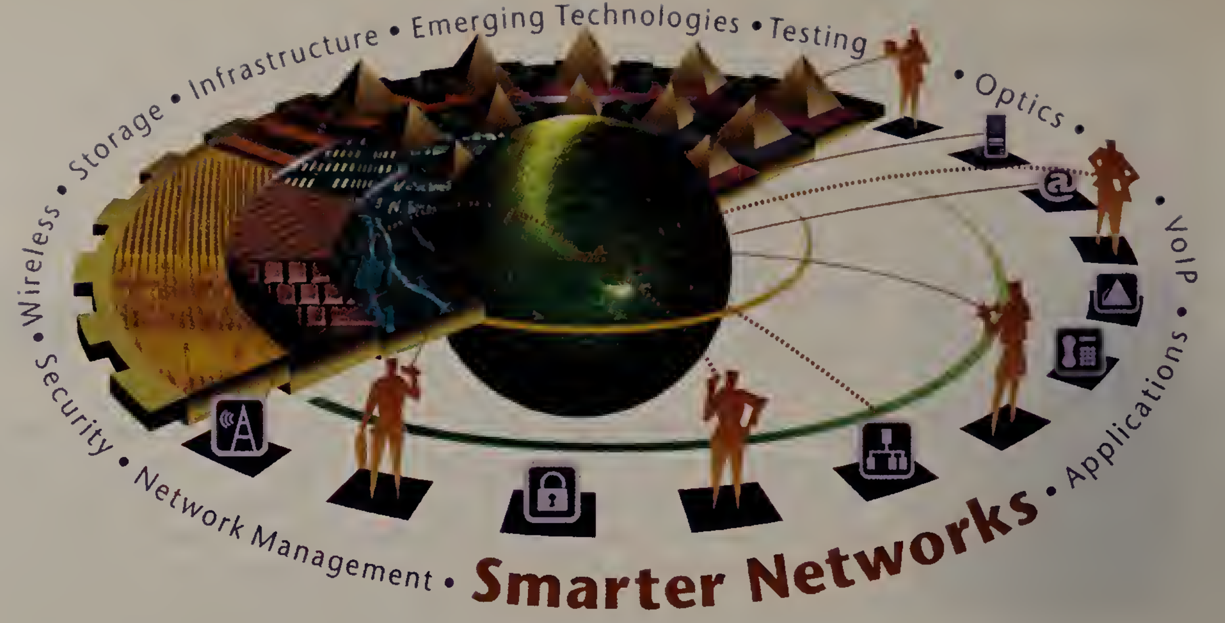

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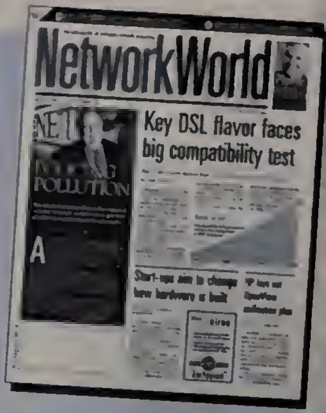
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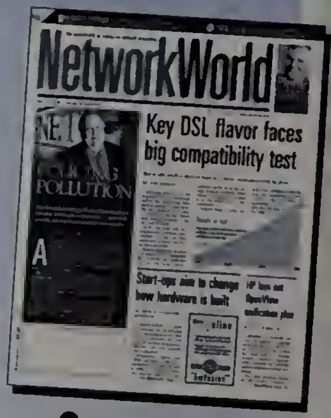
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# Face-off Does the DMCA go too far?

Two industry groups debate whether the DMCA exceeds boundaries in protecting intellectual property.

## Yes, By Fred von Lohmann

DAVID WEINTRAUB

When Congress debated the Digital Millennium Copyright Act in 1998, critics of the bill warned it would stifle legitimate research, erode the public's fair use rights and compromise the security of computer networks. However, lobbyists for the entertainment and software industries persuaded Congress that the law was narrowly tailored to battle digital piracy. Three years later, it is clear that the critics were right.

The centerpiece of the DMCA is its so-called "anticircumvention" provisions, which created several new rules intended to protect copyright owners. One provision bans acts of circumvention, making it unlawful to bypass technical measures that copyright owners use to control access to their works. Another bans the manufacture or distribution of technologies primarily designed or used to circumvent technical measures that copyright owners use to control access or use of their works.

The problem with the DMCA is that it bans far more conduct and technology than necessary simply to counter piracy. The ban on circumvention bans the bypassing of access controls even where the ultimate purpose is perfectly legitimate. For example, this law forbids film school professors from accessing DVDs to take movie excerpts for research purposes, even where it would qualify as a fair use under copyright law.

The DMCA's ban on technologies is even more troubling. During the congressional debates, the entertainment and software industries assured legislators that these provisions would only reach so-called "black boxes" that copyright pirates use. Instead, the new law has been used to stifle academic research and scholarly communication, as illustrated by the dispute between the music industry and a team of computer security researchers led by Princeton computer science professor Edward Felten.

In September 2000, a multi-industry group known as the Secure Digital Music Initiative (SDMI) issued a public challenge encouraging skilled technologists to try to defeat certain watermarking technologies that SDMI selected to protect digital music. Felten and his colleagues took on the challenge. But when they tried to present their results at an academic conference, SDMI threatened the researchers with litigation, claiming the paper was a "technology" banned by the DMCA. The researchers ultimately were forced to resort to litigation before they could publish a part of their research at a subsequent conference.

Perhaps most troubling is the long-term impact the DMCA will have on network security in general. If the DMCA dissuades researchers such as Felten from testing security technologies and publishing their results, the state of computer security can only suffer. It's time Congress reforms the DMCA by taking aim at pirates instead of legitimate science.

*Von Lohmann is senior intellectual property attorney with the Electronic Frontier Foundation. He can be reached at fred@eff.org.*

## No, By Robert Holleyman

DANUTA OTFINOWSKI

The Internet is an amazing tool. It offers creativity and innovation with limitless possibilities for users, creating an unprecedented economic powerhouse.

Fundamental to that success is the Digital Millennium Copyright Act (DMCA). By ensuring legal protection for creative works online — from software and movies to books and music — the DMCA encourages talented individuals to make their works available in digital form to a global audience. Without this law's crucial protections, Internet users would not enjoy the richness of content that is available online, thereby stifling creativity, and with it, growth of the Internet and its benefits to the U.S. economy.

Last week, visionaries from around the globe gathered at the Business Software Alliance's first Global Tech Summit to debate important issues such as the DMCA. The law, which was approved with overwhelming bipartisan support from Congress, does two important things. First, it recognizes that it is extremely easy in the online world to make limitless, perfect copies of copyright material. Second, the law recognizes that technical problems demand technical solutions, and offers legal protection to those solutions. Just as there are laws prohibiting traffic in lock picks, the DMCA prevents traffic in electronic versions of lock picks in the form of software that breaks or removes encryption schemes or other protective technologies.

A small minority insists the DMCA is flawed and seek to weaken or even eliminate the law. Their argument is that the Internet is so fundamentally different that the old rules concerning intellectual property don't apply.

They have it half-right: The Internet is fundamentally different and demands new rules. But the creation of the Internet does not demand we jettison the fundamental tenets of intellectual property protection enshrined in the Constitution. The reason we need new rules is to ensure those protections continue to be as strong in the digital age as they were in 1789.

Since its passage, the DMCA has proven it's the ideal tool for that job. A recent study by the U.S. Copyright Office highlighted the fairness of the law. The study concluded that the DMCA is working as Congress intended, and that there is no need to subject the law to legislative reexamination.

The U.S. leads the world in bringing the economic and social benefits of creativity and rich content to the digital world. Thanks to the DMCA and the protections it affords, creative individuals and companies will continue to drive the Internet forward in dynamic and rewarding ways.

*Holleyman is CEO of the Business Software Alliance, an international organization representing leading software and e-commerce developers in 65 countries. He can be reached at info@bsa.org.*

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**More online!**

Log on to Network World Fusion to voice your opinion on this topic. Face-off authors Fred von Lohmann and Robert Holleyman will add their thoughts.

**DocFinder: 7222**

# PKI: Build, buy or bust?

### Options abound for digital certificates, but so do security concerns and design headaches.

■ **BY DAVID NEWMAN, NETWORK WORLD GLOBAL TEST ALLIANCE**

Imagine a technology that authenticates virtually any transaction, enables e-commerce applications and is available to any user, anywhere.

Now imagine a technology that can lead to fraud, is expensive to implement and requires serious retooling of enterprise hardware and software to be effective. Which one would you pick?

Actually, both descriptions apply equally well to the same technology: public-key infrastructure (PKI). PKI can help anywhere strong authentication is needed — in business-to-business transactions, in bank exchanges, in communications involving human resources data. These types of transactions are usually encrypted using digital keys, and PKI comprises the policies and equipment to manage those keys.

In recent history, PKI has taken its place alongside firewalls and VPNs as a security must-have for a growing number of enterprise networks. But PKI design remains something of a black art, forcing network professionals to wade through a thicket of acronyms and algorithms. It's little wonder many companies opt to outsource the entire process. Others, mistrustful of delegating too much security, muddle through rolling out their own.

For network managers opting to build their own PKI, the biggest risk is compromised certificates resulting from network, physical or personnel security that isn't up to a specification. Outsourcers are usually strong in these areas, but any company going with a commercial certificate authority provider still needs to be vigilant that the provider keeps the corporation's data private.

Deciding whether to build or buy is probably the most important step in any PKI implementation. Neither route is easy, and both pose serious secu-

# What is PKI anyway?

Simply put, public-key infrastructure is the collection of components and policies needed to issue, manage and revoke digital certificates. These certificates can then be used to authenticate any application, person, process or organization in an enterprise network, extranet or on the Internet.

Any PKI design is only as secure as its weakest component. Therefore, good PKI design requires a thorough understanding of all the components.

Although PKI's extended features are numerous and numbingly complex, the basic element is simple: PKI begins with the certificate.

At a minimum, a certificate binds identification with some means of verifying that identification. As an everyday comparison, we can look to a driver's license for functional similarities.

Like its digital counterpart, a driver's license is issued by a trusted entity — in this case, a department of motor vehicles. The license uniquely identifies its holder by stating name, address and other signifiers such as height and weight. It has a unique identification number (a public key) that lets authorized users access private information about the user. It discourages forgery and tampering through use of holograms and special paper. And it contains an expiration date. All these features of the driver's license are also critical in digital certificates.

### [illegible]

**The basic element of any public-key infrastructure is the digital certificate. Like a driver's license entitles its holder to navigate the roads, a digital certificate lets its holder navigate a secure network.**

Both a license and a digital certificate contain an expiration date.

One current shortcoming in digital certificates is that most don't identify the roles or functions its holder may perform. In contrast, a driver's license can authorize the holder to drive a car, but not a school bus.

Like the information contained about a user on a digital certificate, a driver's license uniquely identifies its holder by stating name, address and other signifiers, such as height and weight.

A digital certificate's public-key identifier could be likened to a driver's identification number, which lets authorized users access private information about the user.

A trusted entity, such as a department of motor vehicles, issues a driver's license. Likewise, a trusted certificate authority issues a digital certificate.

A digital certificate is different because it doesn't just authenticate people. A certificate may also authenticate an entire organization, an e-mail or IP address, or a certificate authority.

Digital certificates differ from driver's licenses in two important regards.

First, they don't just authenticate people. A digital certificate may also authenticate an entire organization, an e-mail or IP address, or a certificate authority. The most common format for digital certificates, the ITU's X.509 recommendation, defines a range of means for identifying certificate holders.

Second, digital certificates are limited in that most don't identify the roles or functions its holder may perform. In contrast, a driver's license can authorize the holder to drive a car, but not a school bus.

The security concern here is that a certificate, by itself, offers practically nothing in the way of access control. Obviously, a security infrastructure that authenticates a user but places no restrictions on the user's actions doesn't offer much security. For this reason, network designers usually look to firewalls and VPNs, rather than PKI, to establish access control (see "PKI, firewalls, and VPNs," page 52).

The PKI X.509 working group of the Internet Engineering Task Force is working to address this issue with an attribute certificate profile that is an authorization/access control mechanism. These documents are still in draft status.

The other basic PKI building blocks include the certificate authority, registration authority, repository and an optional archive.

The certificate authority, as the entity that signs and issues certificates, lies at the heart of any PKI. Certificate authorities are typically housed in data centers, although theoretically they can be located anywhere in a network. The certificate authority signs the certificates it issues with its private key, vouching for the authenticity and integrity of those certificates.

If an attacker were to gain possession of the certificate authority's private key, the certificate authority's authority would be compromised. Thus, protecting certificate authority's private key from compromise is of the utmost importance. That means ensuring physical and network security for the certificate authority, and personnel security for the people who administer it.

Besides signing and issuing certificates, the certificate authority keeps tabs on certificate status. Certificates carry expiration dates, and it's up to the certificate authority to revoke certificates when they expire.

But what if a certificate's trustworthiness comes into question before its expiration date, such as when an employee leaves a company? In this case, the certificate shouldn't be trusted even though it hasn't expired. To handle such situations, the certificate authority maintains a certificate revocation list (CRL). Certificate users can query the CRL to determine whether a certificate remains valid.

CRLs can be retrieved by several means including e-mail, Web and Lightweight Directory Access Protocol queries. However, all these query types assume the CRL is static, which raises security concerns about the frequency of CRL updates. To address these issues, a newer protocol called online certificate status protocol (OCSP) lets a potential certificate user query the certificate's status in real time. The latest versions of Microsoft and Netscape Web browsers support OCSP.

The registration authority is responsible for verifying the identity of certificate holders. This is a different process than certification itself, and it may happen before or after the certificate authority generates a certificate.

Registration authority can be physically separate from certificate authorities, or they can run on the same server. In some PKI designs, one certificate authority communicates with many registration authorities. If the registration authority and certificate authority are separate, securing communications between the two is critical.

A repository is simply the database that stores certificates and CRLs. Repositories aren't trusted entities, but users trust their contents because they've been signed for by a certificate authority and/or registration authority. It's important to restrict write access to the repository.

Some PKI models also include an archive for long-term storage of information that the certificate authority uses. This can be useful if disputes arise, such as contesting the amounts involved in a digital transaction. An archive can also verify signatures on old documents such as wills or long-term bonds. Because archives certify that the information they hold was good at the time it was received, there's also a requirement that they protect their contents from tampering.

— David Newman

rity risks if poorly implemented.

## Designing issues

For build and buy decisions, network executives will need to understand the various PKI components, the elements of PKI design and the ways in which PKI interacts with existing applications and network infrastructure.

By mixing and matching the basic building blocks, network designers can put together PKI for a department, a company, many companies or many individuals. The design phase is where PKI gets tricky.

In the most basic case, all users request certificates from one certificate authority. This design is simple, but also unrealistic in most company settings because it may not scale to encompass multiple offices or large numbers of users.

A more common type of PKI design involves a hierarchy of certificate authorities with a "root" certificate authority at the top of a tree (see Figure 1, right). A hierarchical design is relatively simple, but on the downside, it doesn't provide for direct any-to-any connectivity among certificate authorities.

Using this model, any PKI-enabled application must first verify the authenticity of a certificate before using it. This involves the certificate application walking the tree of certificate authorities and thereby establishing a so-called certification path. In a hierarchical design like this, all certification paths must begin at the root certificate authority as a design restriction — in this case the root certificate authority is the one vouching for all the certificate authorities below it. The deeper the hierarchy, the more complex the certification paths become.

An alternate design employs a mesh topology (see Figure 2, right), with all or most certificate authorities directly connected to each other. Here, certification paths may begin at any point. Accordingly, the certification paths are more varied than in the hierarchical model, but they may actually be simpler for the certificate user. The benefits of a shorter certification path are that authentication may happen more quickly and management traffic is reduced.

Unfortunately, most certificates don't offer clues as to whether they belong in a hierarchy or mesh, or at which point along the certification path they should begin to make a query to the originating certificate authority. For security, it probably won't be apparent to end users exactly who is doing the certifying. For performance, longer look-up paths take more time to traverse. Some implementations build a "certificate cache" in PKI-enabled applications — a store of all previously used certificate paths — to speed future attempts at certificate path construction.

It's important to note that these are design and not product issues. Any commercial certificate authority product will work in either design.

The PKI market includes software and equipment vendors and outsourced service bureaus. Software and equipment vendors offer tools such as certificate authorities, smart cards and encryption algorithms. Major vendors in this area include Baltimore Technologies, Entrust, RSA Security and VeriSign.

Service bureaus such as Electronic Data Systems, IBM, the Big 5 consulting firms and numerous ISPs offer the same tools as equipment vendors, along with value-adds such as integration.

## From the buy side

Service bureaus will integrate PKI into just about anything — be it an enterprise application, a router, a set of VPN gateways or a wireless infrastructure. Service bureaus also manage the certificate authority and handle the issues surrounding certificate management, such as obtaining a certificate (called "enrollment" in PKI-speak) and keeping certificate revocation lists current. Outsourcing also moves the responsibility for securing the certificate authority away from the company.

Many companies find it more convenient to hand over these tasks than to manage their own certificate authorities.

"It's still hard to do enrollment and revocation, partially because the protocols are hard and partly because they're not implemented in a neat, tidy way," says Rodney Thayer, a security consultant and author of several PKI and IP Security standards.

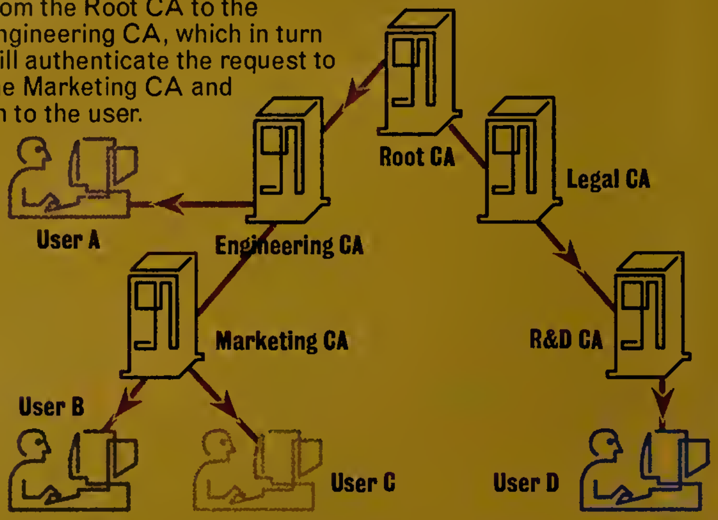
Another plus for service bureaus is they set up and manage public certificate authorities, an important consideration for

See PKI, page 54

## Figure 1: Hierachical PKI designs

In a hierarchical PKI design, all certification paths begin at the root certificate authority (CA) and work their way down to individual users. The benefit to this design is its relative simplicity. The downside is that it doesn't provide for direct any-to-any connectivity among CAs on the same network and could cause some performance delays.

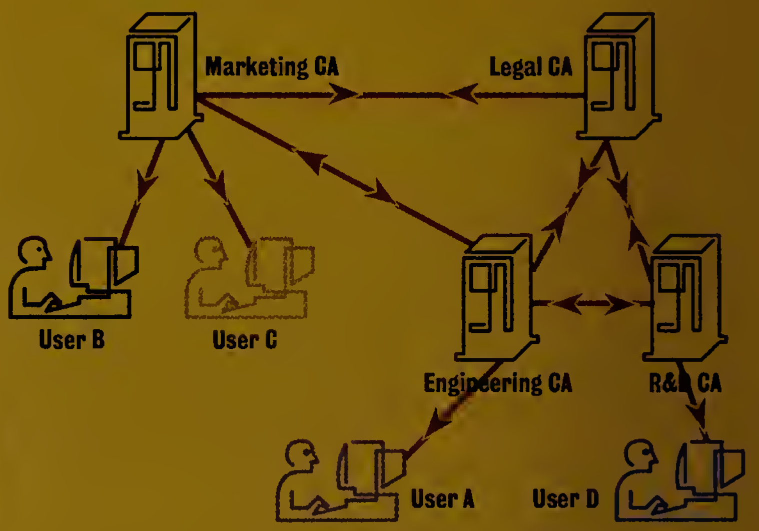
**Sample certification path:**
User A's request for certification goes directly to the Root CA. The Root CA grants certification to User A by informing the Engineering CA that User A is certified. On future requests from, say, User B in marketing, the certification path would proceed from the Root CA to the Engineering CA, which in turn will authenticate the request to the Marketing CA and on to the user.



## Figure 2: Mesh PKI Designs

In a mesh design, different users construct different certification paths. This design lets CAs communicate directly with each other, creating some flexibility, but also resulting in a more complex certification path.

**Sample certification path:**
Logically, User B in marketing would directly query the Marketing CA and User A in engineering would directly query the Engineering CA, without having to walk the certification tree down from some Root CA.



## PKI, firewalls and VPNs

Two common criticisms of public-key infrastructure are that digital certificates authenticate only the holder's identity, not the holder's access rights, and that PKI does nothing to encrypt communications.

Although work is underway to develop access control using PKI attribute authorities, firewalls remain the conventional means of access control, while VPNs remain the standard means of ensuring privacy through encryption.

Actually, VPNs and PKI are complementary; one doesn't replace the other. The Internet Key Exchange elements of the IP Security standard [illegible] the use of digital certificates for [illegible] requests to set up secure sessions [illegible] preferable to static authentication methods, such as using preshared keys, because session partners don't require prior knowledge of one another's secret keys to set up a tunnel.

PKI and firewalls are less complementary when it comes to access control. While few seriously advocate eliminating firewalls from the security arsenal, PKI offers three benefits over firewalls.

First, digital certificates record the identity of every user of a given service. The implications for capacity planning, marketing and security auditing are obvious.

Second, certificates have the advantage of portability, in that a user can come from anywhere. In contrast, firewalls typically grant access only to specific IP addresses, networks or domains.

Finally, revocation can be distributed much more quickly with certificates. In the firewall case, updating access policies requires changes to the rule sets of dozens or even hundreds of devices. In contrast, PKI relies on certificate revocation lists stored on centralized certificate authorities. Revoking one certificate or even 1 million certificates only needs to be done once.

On the downside, using digital certificates requires PKI-awareness by every resource a user wants to reach. And integrating PKI into mission-critical applications and network equipment is a daunting task. A number of service bureaus focus specifically on this problem, but the current low rate of PKI adoption is attributable mainly to the complexity of integration issues.

— David Newman

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**PKI**

**Continued from page 52**

e-commerce applications. Public certificate authorities give customers a ready means of mutual authentication without the need to expose a company's internal network.

One last consideration in favor of service bureaus is that PKI standards are still a moving target. Going with a service bureau could relieve a company of having to keep current with the alphabet soup of PKI protocols and the politics that surround them.

Consider the two competing proposals for "certificate lifecycle" issues — enrollment, revocation and expiration. Entrust and Baltimore Technologies back a specification called certificate management protocol, while VeriSign, Cisco and Microsoft support a competing specification called certificate management protocol using cryptographic message syntax. The two protocols differ in the extensions and cryptography standards they support. Companies without an abiding interest in these topics may find it more worthwhile to pay someone else to sort it out.

The biggest downside for buying a managed PKI service is the farming out of trust. Some companies won't outsource any security function because they're not comfortable delegating security to outsiders.

## Builder's choice

That doesn't mean outsourcing is automatically the best choice. Arguments for rolling out your own PKI include project scope and a desire to control all aspects of key management.

A project involving one certificate authority, a small set of users and a simple security policy, may not justify bringing in a service bureau. For more complex situations, the buy/build decision may be a question of deciding whose time is more valuable — the internal staff or the outsourcer. Thayer favors internal certificate authorities, regardless of project size.

"People always say internal [certificate authorities] are hard to do, but they're really not any harder than outsourcing," Thayer says. "When you look at all the procedures you end up going through [with service bureaus], it ends up about the same."

Thayer cites one case where a client decided to outsource its PKI and had to sign nine contracts, including different pacts for requesting and issuing certificates. "Some of the contracts were just silly, like those barring us from fraudulent behavior that was already illegal," Thayer says.

Thayer also rejects the notion that outsourcing enables cross-certification of multiple organizations' certificate authorities. "Cross-certification is a trust leakage mechanism," he says.

While building one's own PKI has its advantages, the learning curve is definitely steeper. Network executives will need to learn PKI protocols and design issues that can make even the most complex lower-layer network design look like child's play.

## Certified, but safe?

Regardless of which way you go with the buy/build decision, there are serious issues of trust management that need to be addressed in any PKI design.

These issues include the security of the certificates and certificate authorities; the authority of the certificate authority; the uniqueness of certificates; and the degree to which integration of other systems into PKI may compromise the system.

Certificates are assumed to be secure because they're issued by an authority and signed with a user's private key. But the vast majority of users store certificates on conventional computers or smart cards, both of which are prone to attack. As in any system design, security is only as strong as the weakest component. If the storage medium is vulnerable to viruses, other malicious code, or even physical attacks, the certificate is vulnerable, too.

In some states, the holder of a key certified by an approved certificate authority is responsible for whatever that key does, says Bruce Schneier, a leading cryptographer and CTO of Counterpane Internet Security, a security monitoring service. The problem with this, he says, is that it doesn't matter who was at the keyboard or what virus may have done the signing.

PKI vendors generally consider nonrepudiation — the inability of a certificate holder to deny a transaction took place — to be a benefit. Schneier doesn't think nonrepudiation is a valid practice in all cases. He cites the example of credit cards, where users can repudiate unauthorized charges. There isn't yet a similar mechanism in most PKI designs.

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- Track the progress of the IETF's PKI working group.

**DocFinder: 7223**

Of course, securing the certificate authority is also a major issue in the case of buying or building. A compromise of the certificate authority's private key would be a disaster in security terms because it means the attacker could issue bogus certificates.

But attackers can compromise the certificate authority's authority even without compromising the certificate authority. In an alarmingly high-profile case earlier this year, attackers posing as Microsoft employees successfully extracted bogus certificates from a certificate authority run by VeriSign. Microsoft was forced to issue a security bulletin stating that the vulnerability could affect "all customers using Microsoft products." VeriSign determined the breach occurred because humans did insufficient checking on the validity of the attacker's request.

Although the bogus certificates apparently were never used, they could have been used for anything — and that raises the issue of certificate legitimacy. For example, your assistant could pose as you and say to your bank "withdraw all my money" or to your doctor "send all my medical records to XYZ address."

Microsoft asks users to decide whether they trust Microsoft content when they download bug fixes. Few users actually inspect the digital signature to verify its content, making it just as easy to accept forged certificates as legitimate certificates.

Counterpane's Schneier points to an even more pervasive example — the Secure Sockets Layer encryption used to secure Web transactions. He says there are Web pages whose certificate is for the Web hosting company, not for the company whose logo is on the pages. In such situations, Schneier says it's not clear with whom the end user is having a "secure" conversation. Worse, he says, most end users can't or won't be bothered to find out.

Yet another generic problem with certificates is that they may not be unique. Schneier gives the example of a certificate for someone named John Robinson. Even if a user knows only one person named John Robinson, the certificate authority may know dozens, Schneier says. The X.509 format allows the use of many other attributes besides the "Common Name" for identifying a certificate holder, but this practice assumes the certificate user also knows to use those other means when looking for the correct John Robinson.

A final issue is that of integrating PKI with existing applications, especially authentication schemes. Consider single sign-on (SSO) authentication mechanisms. It is possible to integrate a certificate-issuing smart card into an SSO system so that a user only has to authenticate once a day to reach all the computing resources in the company. While it sounds convenient, Schneier cautions that it also defeats the PKI's intent of validating every transaction at the time of the transaction. For an office clerk, it may not be a big deal if someone "borrows" the computer while he is at lunch; in the boiler room of a brokerage-trading floor, the stakes could be different.

Properly implemented, PKI can deliver a powerful means of making any transaction so secure it's virtually immune from attack. It can also pose some of the thorniest security challenges network designers have ever faced. Getting it done right is difficult and requires taking the time to understand and implement the various pieces of the PKI infrastructure in a truly secure way.

*Newman is president of Network Test, an independent benchmarking and network design consultancy in Westlake Village, Calif. He can be reached at dnewman@networktest.com.*

## Whom do you trust? Questions to ask potential PKI vendors.

Public-key infrastructure can help usher in a new age of secure transactions — or it can be a security nightmare. Before signing on the dotted line with any PKI vendor or service bureau, here are some tough questions to ask vendors vying for your business:

- How vulnerable is the certificate authority's signing key?
- Is your organization the only signing authority? If [illegible] who else are we trusting to authenticate our certificates?
- Does the PKI handle certificate revocation in real [illegible] static lists?
- [illegible] revocation be retroactive? Is the timestamp [illegible] secure?
- [illegible] certificate enrollment process protect[illegible] requests?
- [illegible] revocation and repudiation mechanisms
- If the registration authority and certificate authority are separate, how vulnerable is the link between them?
- For Secure Sockets Layer-enabled Web transactions, who certifies the security of the server?
- How does the PKI ensure certificate holders are unique?
- What vulnerabilities exist when integrating PKI with other authentication mechanisms such as single sign-on and Remote Authentication Dial-In User Service?

*(Hint: "No," "none," or "not at all" are not good answers for any of the above.)*

— David Newman

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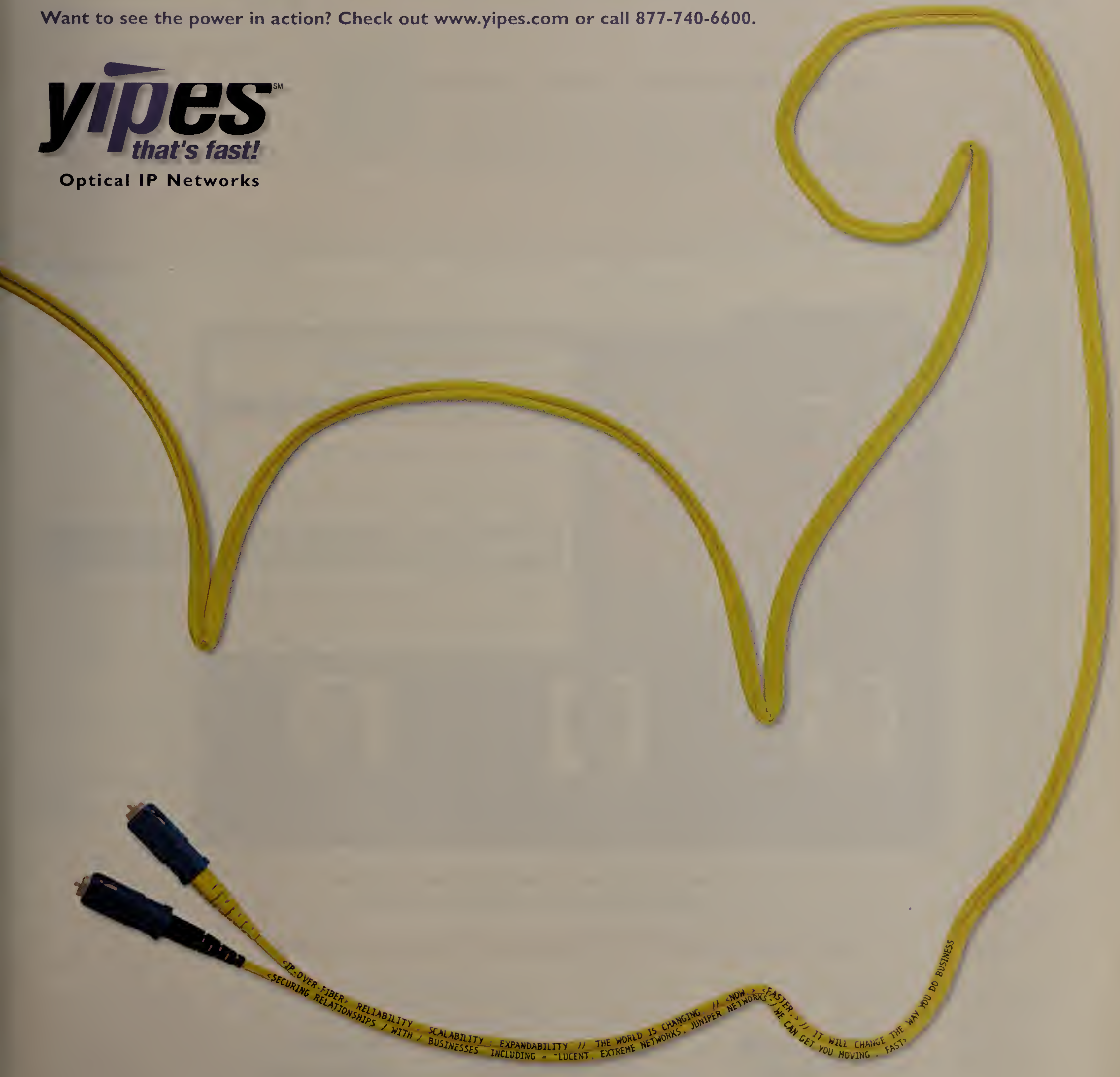

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NetworkWorld Review

# Vividon's Streaming Delivery Accelerator

## Increase the impact of your streaming without breaking the bank.

■ BY CHRISTINE PEREY, NETWORK WORLD GLOBAL TEST ALLIANCE

When CEOs request expansion of streaming media at their companies but don't increase its IT budget, an inexpensive option is Vividon's Streaming Delivery Accelerator. The SDA is a very low-cost, yet high-density cache dedicated to streaming media delivery. And Vividon Service Manager is a secure and intelligent management layer interface for SDA.

We awarded SDA and VSM our World Class Award for its high performance, and — by virtue of a Web-based management system — high manageability and functionality. And considering its size and resources, the company exhibits outstanding pre- and post-sales services in customer facilities.

Caches aren't new in the network. Vendors, such as NetApp, CacheFlow and Inktomi, that build caches for static text and images recognize that differences in file size, sequence and latency sensitivity, as well as bandwidth requirements for streaming media, require special attention. While many cache vendors support streaming media, Vividon says a different architecture is needed to achieve the lowest price/performance point. According to Vividon, traditional cache makers can't reach Vividon's price. It's unusual to find a new product that costs less and offers more than existing alternatives (at least in streaming), but this one does.

A challenge for Vividon in positioning its systems is that the combination of SDA and VSM create more than "just a cache." SDA can be considered a server and a cache, depending on where it is placed and how it is used. It stores content and also delivers it in response to client requests. It supports on-demand services and live-streaming services. It stages content, but also offers user support for video cassette recorder-like controls. Through an intuitive Web-based interface, VSM can configure, monitor and manage as many remotely deployed SDA systems as your network requires. But given the storage capacity and the throughput of each unit, you many not need many SDAs.

### Some heavy lifting

An SDA2000-series system packs 50 pounds of interfaces, hard disks and power supplies into a mere 16.75 inch by 28.75 inch by 3.3 inch space. Because of the high density of these systems, Vividon leads the customer through a simple process to ensure that SDA is shipped with appropriate rack-mounting brackets (and screws) and is installed as close to the ground as possible. Every step is carefully diagrammed in the installation guide.

Vividon is equally diligent about ensuring that network interfaces are properly ordered and preconfigured. Options include two 10/100 Ethernet interfaces for the 1U (1.75 inches) systems, one Gigabit Ethernet (copper or fiber) for the 2U systems and dual Gigabit Ethernet (copper or fiber) for the 5U systems. All the interfaces are engineered by the company to provide maximum streaming throughput and currently must be installed by Vividon technicians prior to the units shipping. By accidentally inserting our network cable into a jack and failing to get connectivity, we learned that the native platform on which SDA is installed also has a (Dell) built-in network interface that is disabled.

Running the "sda_field_install" utility causes SDA to contact VSM. Once that is completed, it should be the last time you need to interface directly with an operational SDA in a network via a keyboard. From this point, all media and SDA management and SDA report viewing is performed via VSM's graphical user interface console.

### Packing a performance punch

By virtue of their significant throughput (160M bit/sec for the 1U, 400M bit/sec for the 2U and 650M bit/sec for the 5U), Vividon's SDA-2000 requires at least a Gigabit Ethernet environment to achieve performance potential. Anything less will impede the streaming media traffic, reduce the number of streams delivered by the (SDA-2000) system and defeat the purpose of the original purchases. Testing performance is fundamental to establishing Vividon's price/performance value claims.

In our tests (see "How we did it," www.nwfusion.com, DocFinder: 7126), we saw that SDA can sustain throughputs that one might expect in a production network environment. In one test, SDA-2000 delivered 4,500 concurrent streams of 56K bit/sec each without dropping a packet. Because SDA was programmed to report any peaks in activity to VSM, we saw an alarm in the system's monitoring page. In another test of 1,200 connections with an aggregate throughput of 380M bit/sec (approaching the system's maximum of 400M bit/sec) we also triggered an alarm. When the system reached its threshold limits, the next stream request was denied, instead of granting the request and causing an overall reduction in performance to existing clients.

In another performance test with Vividon's Swamper load generator, we sent 396 simultaneous requests for the same file, mimicking a case in which one file is very popular. In this situation, SDA-2000 delivered all the files successfully and consistently. During this request by Swamper,

See Vividon, page 59

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See how we did our test and a network diagram.

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## Net Results

### Vividon SDA-2000-M and Vividon Service Manager 1.0

**4.5** RATING

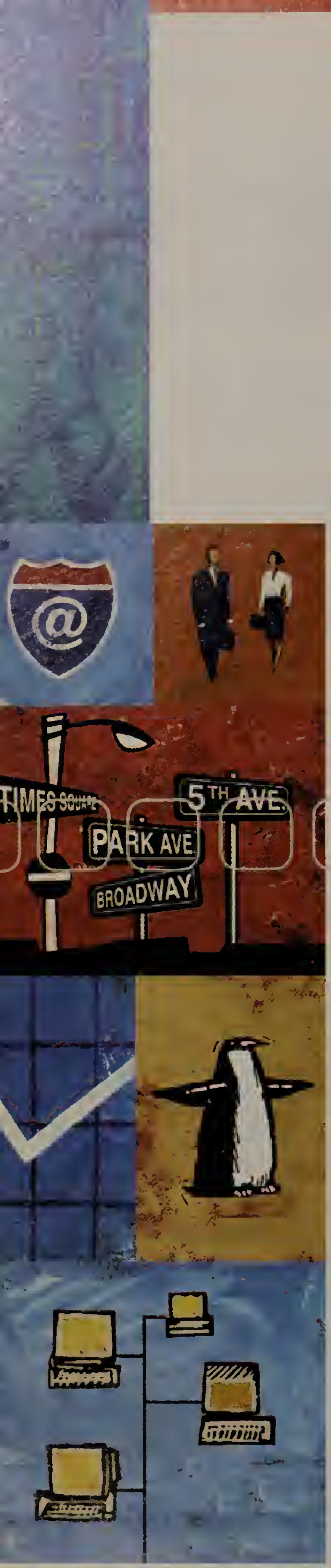
**Company:** Vividon, (978) 371-9550 www.vividon.com. **Cost:** (for product tested): $30,000, $23,000 base platform with QuickTime and HTTP protocol support and $7,000 for Microsoft media protocol support, the SDA-2000-R with Real System support is also $30,000 plus $4,500 for annual maintenance. **Pros:** Very high density, high performance, high functionality and manageability, low cost per hour stream. **Cons:** Dedicated Linux server required for VSM, proprietary operating system means that only Vividon can write applications to the SDA; works with any Real Networks player and QT player, but only works (out of the box) with Windows Media Player 7.1 clients.

### What's the score?

WORLD CLASS WINNER

| | Vividon SDA-2000-M with Vividon Service Manager |
|---|---|
| Performance 25% | 5 |
| Features 25% | 4 |
| Management 25% | 5 |
| Price 25% | 4 |
| TOTAL SCORE | 4.5 |

**Individual category scores** are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.



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- Take part in our live, fun and entertaining quiz show, "The Golden Penguin Bowl", as the ever-fashionable geeks and nerds once again contend for the coveted Golden Penguin award, hosted by **Nicholas Petreley**, *Founding Editor, varlinux.org*
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## Vividon

Continued from page 57

we watched the same video file play back on a Windows 2000 Server in Windows Media Player 7.1. The media player's statistics window indicated that no packets were lost or recovered during the session.

Tests with and reports generated by Windows Media Load Simulator (WMLS) similarly indicated that all requests were met. When the test was finished, we reviewed and printed usage information about user (in this case Vividon's Swamper and WMLS) interactions with files on SDA via VSM reports viewer. Information about the network, based on the SDA logs, and information about users and content can be viewed in separate interfaces, but data and reports cannot be exported. Vividon recommends that customers explore products from partners such as Lariat (www.lariat.com) to implement custom billing and reporting systems as needed.

### Functionality and interoperability

An issue that has long limited the functionality of products designed to deliver streams is the lack of standards (or the high number of standards) in the field. SDA interoperates with networks and standards via support for multiple protocols, such as HTTP, Microsoft Media Server, RealTime Streaming Protocol, multiple content types, including streaming audio/video (in QuickTime, Real Media or Windows Media), Flash animations, and any static files such as Web pages and images. SDA is also Windows Media certified, meaning

See Vividon, page 61

## Installation details get a little hairy

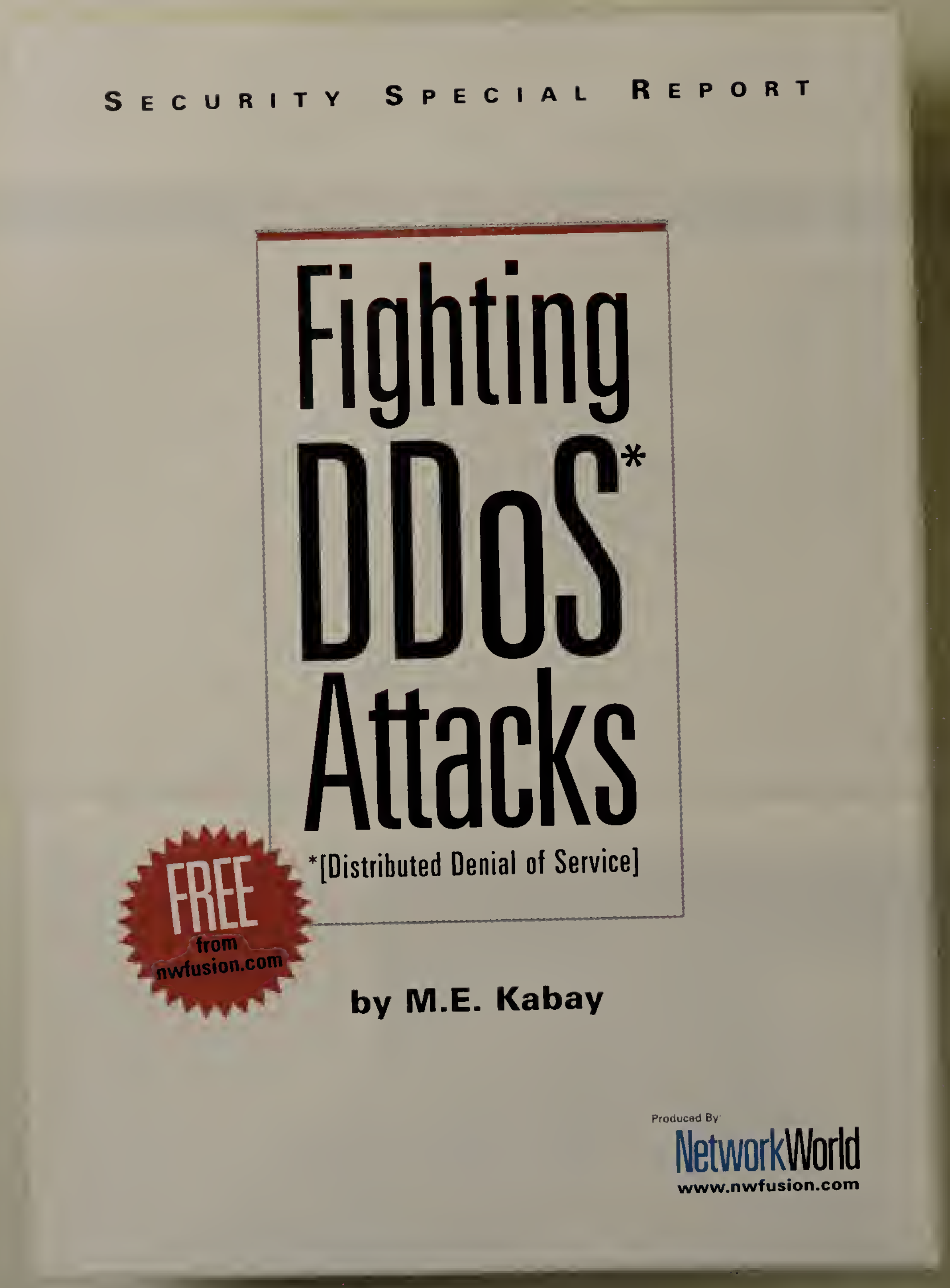
Before SDA can be truly functional, the VSM application must be installed on a dedicated server running Red Hat Linux Version 7.1. Vividon provides a CD-ROM with Red Hat Linux to install on your server if it is not currently running 7.1 software. This took longer than expected because of some conflict between the image on the CD and the Compaq ML330e server ordered for the testing. After nearly six hours of troubleshooting using Vividon's excellent online customer support system and telephone conferences, and guaranteeing that there was no hardware failure, we switched to a Dell server with Linux 7.1 preinstalled.

The VSM install utility installs VSM software on the Linux computer. Among other tasks, the installation automatically creates a staging directory where you can add content files to distribute to the SDAs in the network. VSM examines and converts all streaming media content into a format the SDAs can manipulate and deliver with maximum efficiency. Nearly all subsequent tasks on VSM are performed in a Web graphical user interface (GUI), making it not only easier for a non-Linux user, but also accessible from any secure IP-connected location.

Ultimately, the security of the SDA network depends on the security of this Linux server that acts as the service manager. Vividon has password-level support at several levels, and the VSM GUI is a secure Web interface that (via Secure Sockets Layer certificates) encrypts and deciphers all communications.

Once the VSM software has been installed, is ready and its operator runs the register_sda utility, the system integrator or installer installs a utility and configures the SDA for the enterprise network. Familiar to Unix users, the proprietary operating system's command-line interface prompts the installer for 59 different specifics, ranging from the elementary SDA host name and logon information to dozens of streaming media-related parameters, such as ping interval, connection idle timeouts for each media format and what to do if the system reaches various benchmarks such as HTTP bandwidth maximums. Eighty percent of these have defaults suggested and the user would find it much easier to have them preloaded by Vividon in the register utility.

**— Christine Perey**



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### Vividon

**Continued from page 59**

that Microsoft put it through a battery of more than 500 tests created for verifying compatibility of caches with Microsoft file management and delivery protocols.

SDA and VSM also produce standard log files that can easily integrate with billing, quality-of-service management and service-level agreement systems.

Although populating content into the directories on VSM was laborious and surprisingly "manual," once that was done, many of the processes around streaming media management were automated.

The manual and user guide are well-written, so customers should run into few problems once they leave the command-line interface. But if some of the commands or prompts in VSM aren't clear, there is robust context-sensitive help preloaded on the VSM server during the software installation.

### Affordability

This product is not designed for occasional or lightweight streaming applications. But for a corporation or content provider with an appetite for streaming that consumes thousands of simultaneous streams, the economics of Vividon's products are compelling.

For example, assuming collocation costs of $150 per 1U, electricity at 5 cents per kilowatt-hour, an initial capital outlay of $30,000 for Vividon's hardware and the server on which VSM operates, and that the equipment will be in use for 36 months, SDA will cost the customer approximately 5.3 cents per 100 hours streamed compared with 22 cents to 24 cents per 100 hours streamed using a similarly provisioned and loaded set of caches from competing vendors or off-the-shelf servers.

The alternatives, based on published (not tested) cache vendor specifications, require between 5U and 10U of rack space for cache and storage capacity, and cost between $135,000 and $140,000.

In addition to dramatic differences in initial purchase prices, the recurring cost associated with alternatives (servers or caches) that use more rack space further tip the scales in favor of Vividon's high-density solution.

### Conclusion

If you've been banging your head looking for a streaming media investment, the Vividon solution is a steal. The product's performance was great in every respect, and we believe the competitors will find it difficult to match Vividon's SDAs, even in real-world environments.

*Perey is president of Perey Research & Consulting in Placerville, Calif. She can be reached at cperey@perey.com.*

## What Vividon will cost you

Pricing information for the Vividon product family:

| Item | SDA-1000 | SDA-2000 | SDA-5000 | VSM software |
|---|---|---|---|---|
| Annual maintenance and support | $1,950 | $3,450 | $7,500 | $1,000 |
| List price * | $13,000 | $23,000 | $50,000 | $4,000 |
| Throughput ** | 160M bit/sec | 400M bit/sec | 650M bit/sec | N/A |
| Streams | 1,700 | 4,500 | 9,500 | N/A |
| Maximum storage | 108G bytes | 180G bytes | 360G bytes | N/A |
| Form factor (19-inch rack) | 1U | 2U | 5U | N/A |

* List prices shown are for basic configuration with QuickTime and HTTP protocol support. With Microsoft support, the list prices are $17,000, $30,000 and $60,000 for the SDA-1000, 2000 and 5000 respectively.

** Throughput is based on load testing in Microsoft Windows Media environment with all unique content streams being pulled from disk in an on-demand fashion. Significantly higher throughput is possible when the content resides in memory; however, on-demand is a more meaningful measurement of real-world streaming performance.

## Global Test Alliance

■ Perey is also a member of the Network World Global Test Alliance, a cooperative of the premier reviewers in the network industry. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

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# Best bosses

Caring about their people makes these managers tops with IT pros.

■ BY SUZANNE GASPAR

Tying 600 bank branches into one 9,000-node WAN left Andy Kennedy feeling mighty satisfied. After AmSouth merged with another institution, the senior network engineer and his team tore through eight sites per night, upgrading gear, testing applications and configuring desktops to create a single corporate network.

Kennedy credits the successful integration to his boss, Chester Ingram, IT network services manager for AmSouth in Birmingham, Ala. Ingram eased the migration from token ring to 10/100 Ethernet by buffering communications between departments and preventing project changes that would have blown the budget.

"He understands the upper management structure that looks out for the bottom line and knows how to show what IT needs to get things done," Kennedy says.

Kennedy is one of many network professionals who identify caring, resourcefulness and flexibility as common traits of the best bosses. *Network World* asked several readers to share examples of what makes their managers special.

Susan Dunson, network administrator for auto parts franchise Mighty Distributed System America in Norcross, Ga., values her manager's availability. "If I have a problem, personal or work-related, even if I just want to talk about my weekend, his door is open," she says of IT manager Mark Spruill.

Spruill recently advised her when a Unix server was sending dumps to the wrong place. "I tried changing the script, the settings and the drivers," Dunson says. "He suggested just changing the refresh rate, and it worked. It's nice to have someone with 20 years experience to bounce things off."

When a company server crashed three months ago, Spruill offered Dunson a chance to go home while he'd stay to get it back up. They both ended up working several hours into the night to reinstall the accounting server's hard drive and run back-up tapes. "We called out for pizza. It was nice not to have to stay by myself," Dunson says.

### Wading in the trenches

Having a boss who pitches in is something Randy Burns also appreciates. The regional IT manager for TMP Worldwide says missing a report deadline is a sure sign that prompts IT director David Nolasco into action. "He'll reshuffle some duties, and say things like, 'I see you're still signed in on the network, now go home and get some rest.' " Burns says.

As TMP grows through acquisition, Burns is charged with bringing the new sites onto the Dallas recruitment firm's network. Nolasco kept a close watch on stress during the recent weekend moves of seven offices over a 90-day period.

"When paired with my regular IT tasks, five weekends in a row, 48 hours straight, can easily lead to burnout," Burns says.

Likewise, Ross Nosrat, senior network consultant for WorldCom, appreciates help from Patrick Moon, senior enterprise network manager. "If I'm swamped, working on a design and can't do all things myself, he finds someone to do things or does it himself," Nosrat says of his boss. He adds that Moon doesn't bother IT about how to get from Point A to B, but lets them get the job done, remaining available for questions.

Remaining calm in a crisis is a sure sign of flexibility, according to Jeff Davidson, IT support staffer at Simonton Windows in Terre Haute, Ind. When it comes to supporting the firm's 'done right, on-time policy,' IS manager Rena Chaney flies into action. Praising Chaney's ability to handle any crisis, Davidson says, "She can have 10 people screaming, 'This won't work,' and she sorts it out, fixes things and sends them ontheir way."

Joe Wagner, CIO for North Broward Hospital District in Fort Lauderdale, Fla., impresses Joleen Cannon with his effective listening and decision making. Cannon, a systems consultant for the healthcare provider, says when things break, Wagner's objective is to get the right people involved to fix them.

"If there's a critical outage, multiple people are involved," Cannon says. "[Wagner] understands the hospital protocols, listens to all sides, and is fair when people have strong feelings. He makes decisions based on the organization."

The best bosses treat their people right, as Mighty Distributed's Dunson can attest about Spruill. "Some folks have to take pagers on vacation or provide a phone or cell number. Not us. He makes us feel great about relaxing and taking a break," she says.

When Burns got married in August in the midst of the merger, Nolasco scheduled a dinner to meet his new wife. "He went out of his way to make her feel comfortable," Burns says.

Moon is another manager who cares about his subordinates as people, not just employees.

"I was on the job one month when my father passed away and I needed to go to Iran," Nosrat says. "We barely knew each other, and were in the middle of projects, and he said, 'Just go.' "

Nosrat says it's nice to know someone cares, and that's why he'll stay at the company despite having other job opportunities. "As long as he's going to be here, I'm going to be here," he says. ■

## You're the best

Six top-notch bosses, and what makes them so.

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IT network services manager, AmSouth

**Diplomatic, dedicated, effective**

**MARK SPRUILL**

IT manager, Mighty Distributed Systems America

**Compassionate, resourceful, supportive**

**DAVID NOLASCO**

IT director, TMP Worldwide

**Helpful, empathetic, resourceful**

**RENA CHANEY**

IS manager, Simonton Windows

**Optimistic, effective, ingenious**

**JOE WAGNER**

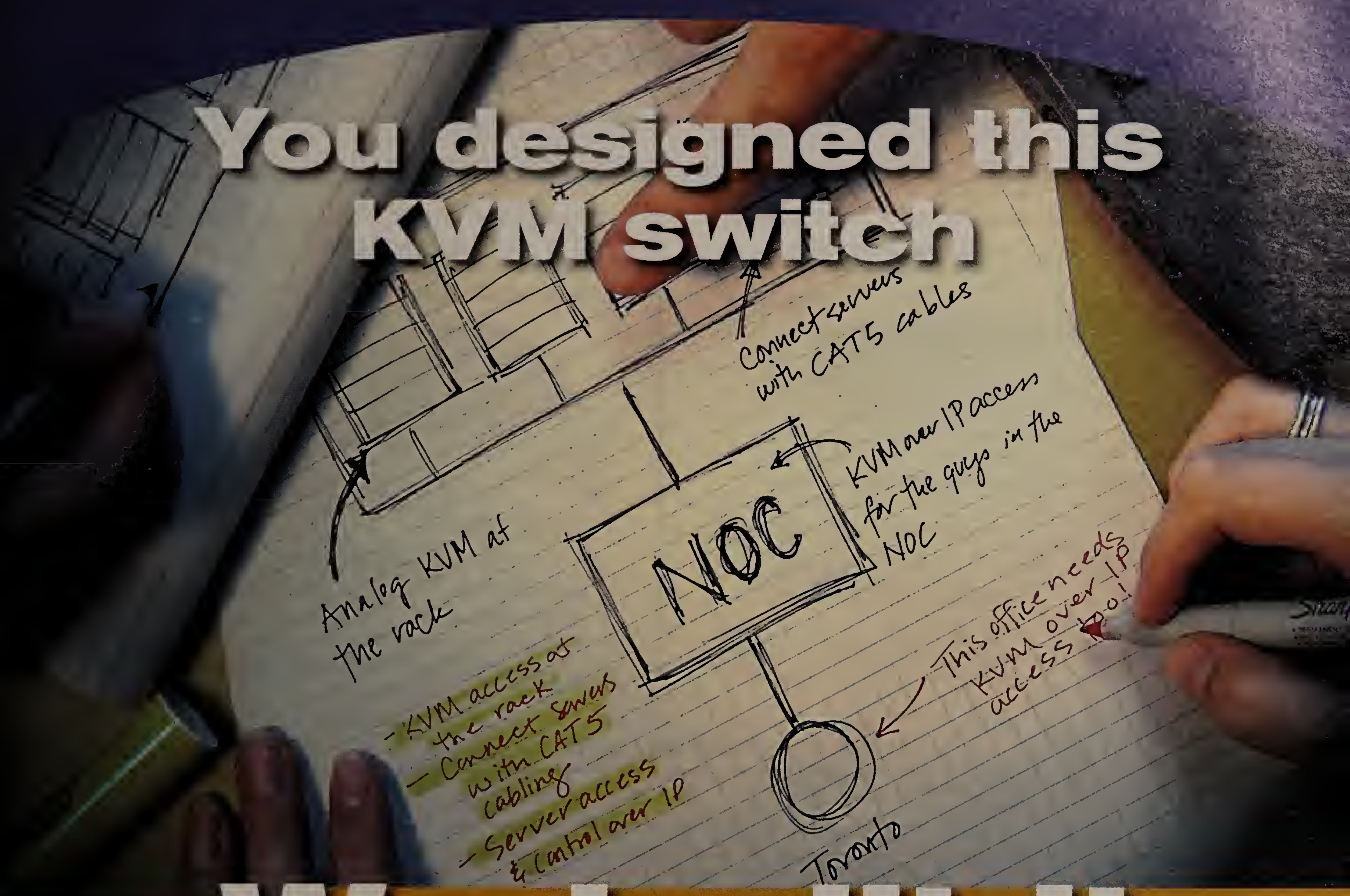
CIO, North Broward Hospital District

**Fair, diplomatic, decisive**

**PATRICK MOON**

Senior enterprise network manager, WorldCom

**Helpful, resourceful, empathetic**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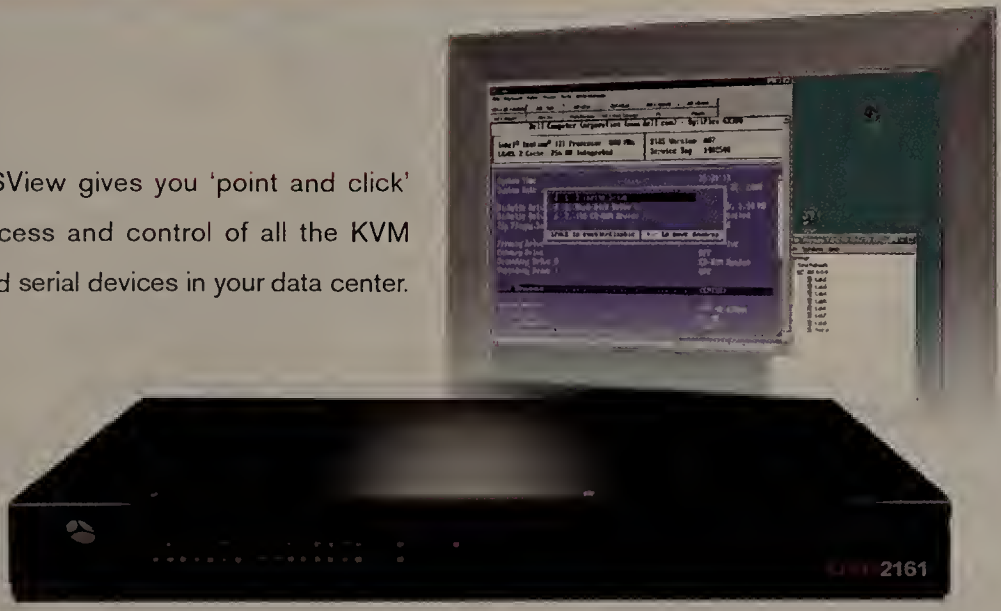

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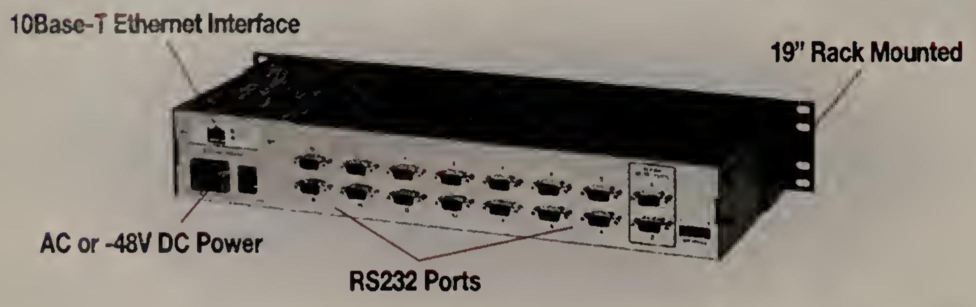

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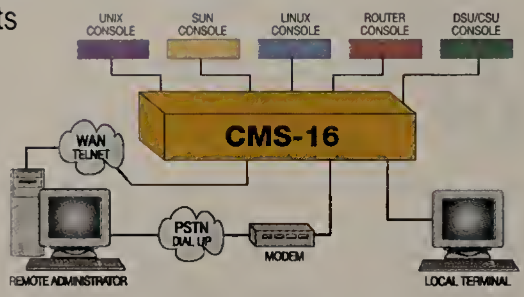

### Telnet and Dial-Up Network Power Switch

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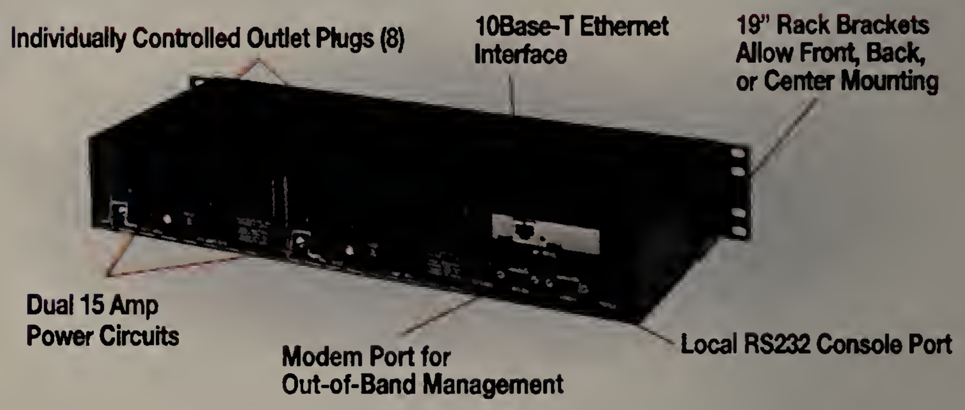
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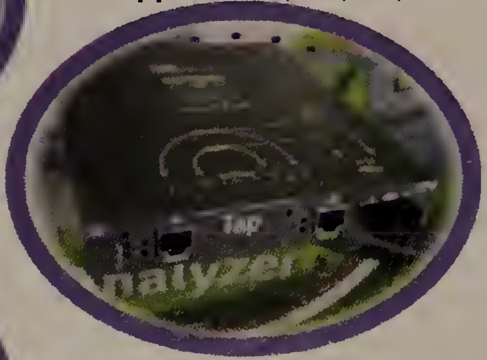

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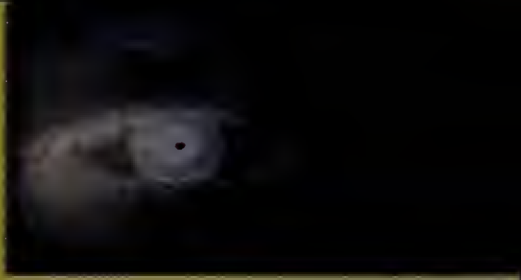

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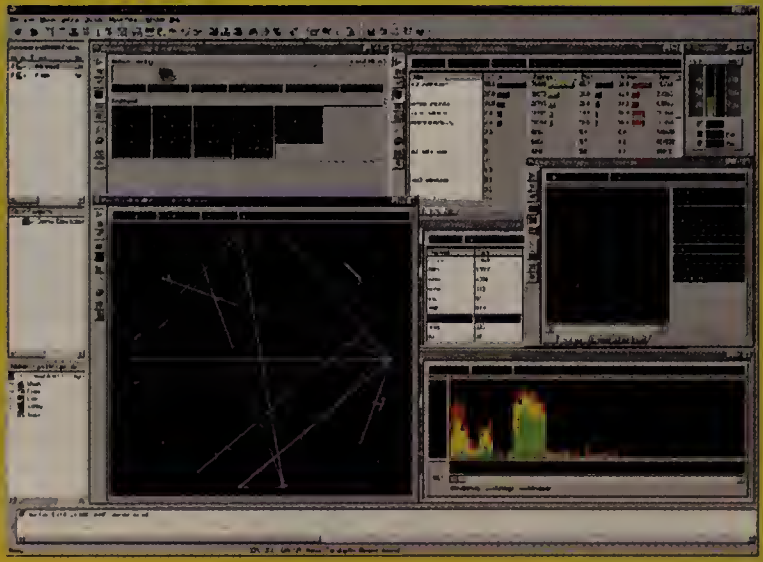

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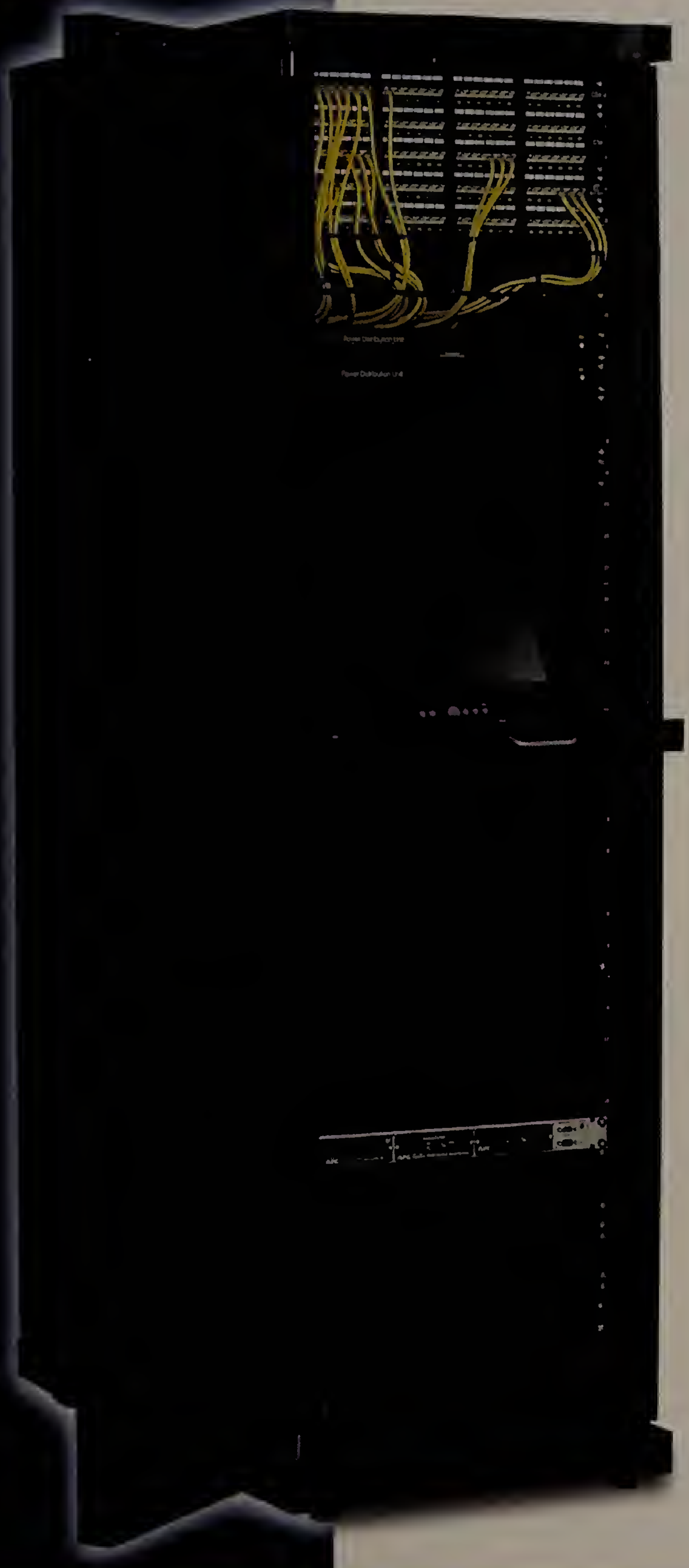

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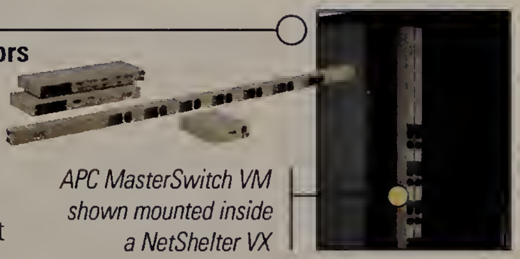

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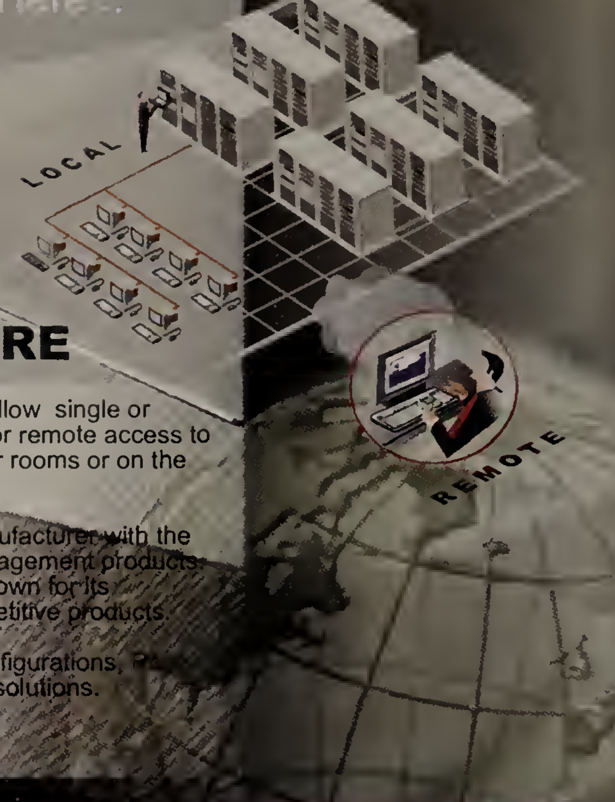

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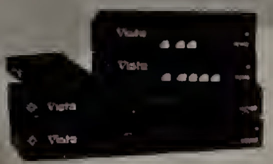

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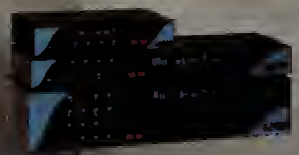

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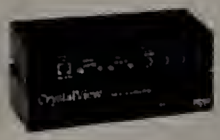

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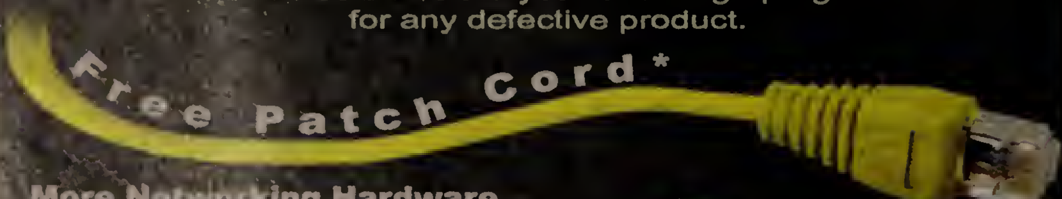

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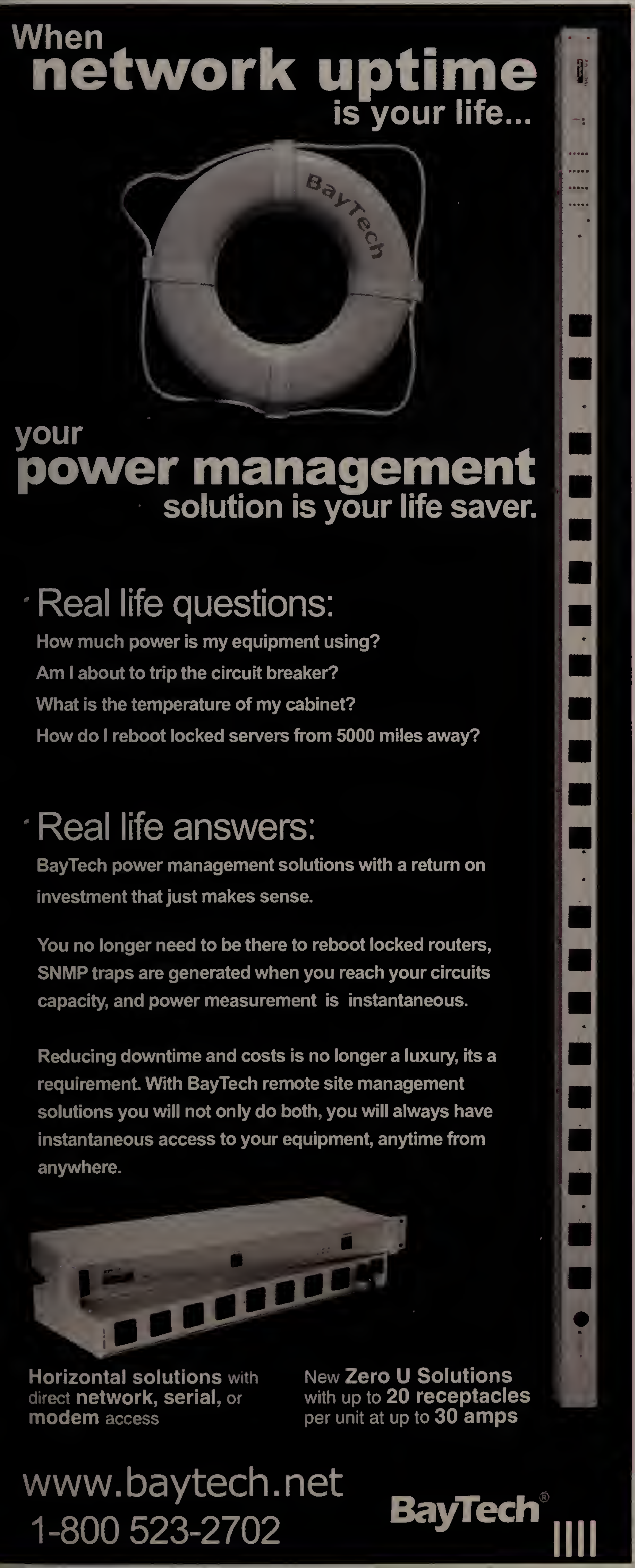

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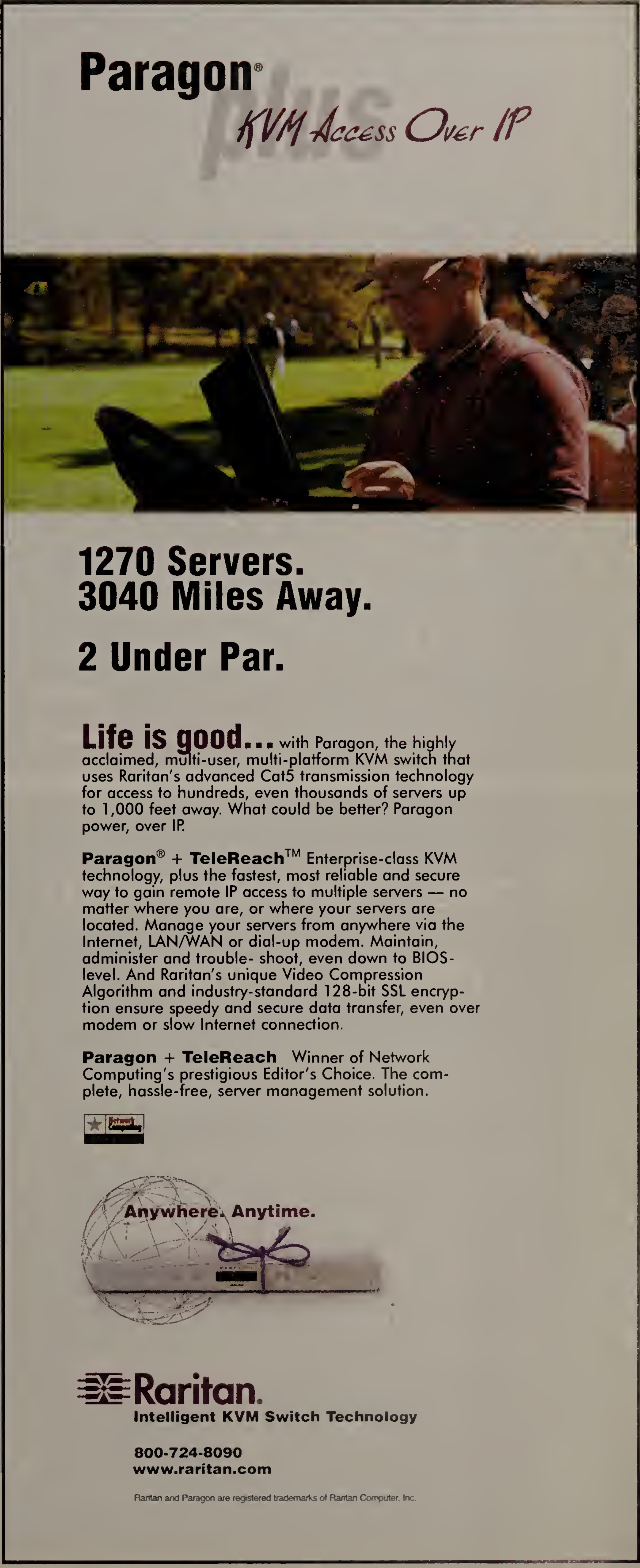

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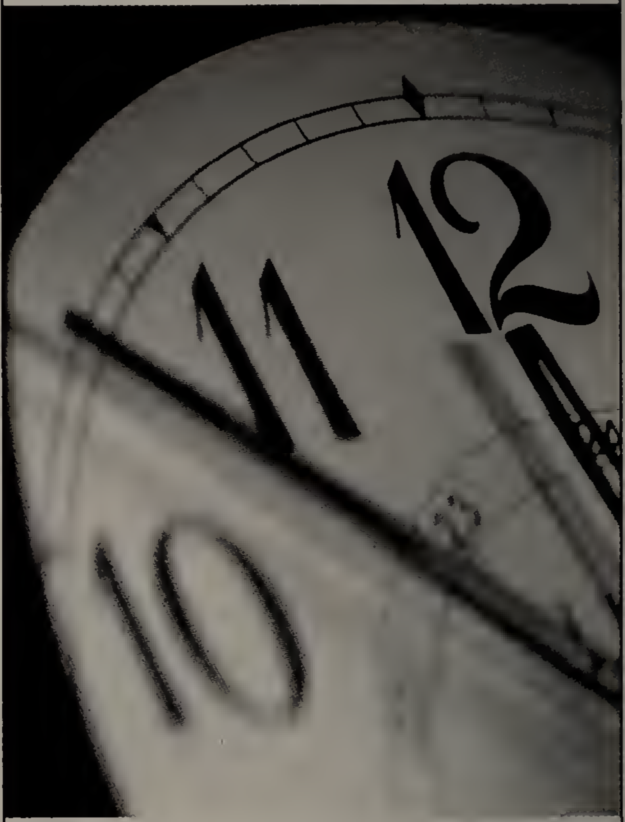

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Software Developers needed F/T by Software Dvlpmt Co. in NYC to drive cutting-edge projects and lead a team of developers, focusing on creation of software requirements and design. Must have Masters in elect. engineer. or comp sci, and 1 yr. exp., or equivalent. Respond to: HR Dept., E Commerce Group Products, 7 Dey St., 4th Fl., NY, NY 10007.

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Programmer Analyst. Must have a Bachelor's degree or equivalent in Computer Science, Computer Engineering or a related field, plus minimum of 1 year experience in software design. Fax resumes to HR Dept., GSCC, (212) 269-0162: Refer to Job # EMP1085.

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SkyMark Corp., a software development company, seeks a Chief Computer Programmer in our Pittsburgh, PA location. This position involves both coding and leading other programmers in design and implementation of commercial software products, working in Visual C++, MFC, SOL, Access, JSP, Rogue Wave's Objective Grid, and Installshield. A qualified applicant should hold a BS in CS or related field, and have 5 yrs of relevant experience. Applicants should send resume to SkyMark, 7300 Penn Ave., Pittsburgh, PA 15208.

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**Thomson Financial** currently has a position available for Team Manager at our Boston, Massachusetts office. Responsibilities include: management & direct oversight of 8-12 software developers, including staffing, budget and schedule responsibility, and appraisal of team member's performance; mentor and technical review of software engineers; maintain and enhance an N-tier Win32 system that employs a front end based on JavaScript and DHTML, using XML and XSL, middle tier components based on Java J2EE and C++ and relational database technology (Sybase, Microsoft SOL) using JDBC. We require at least a Master's degree or equivalent in Computer Science, Electrical Engineering or related field, 5 years experience in software development on the Win32 platform, which includes the following: at least 4 years experience of web development experience utilizing COM and relational database technologies, at least 3 years experience in managing teams delivering HTML/DHTML, JavaScript, XML & XSL solutions and at least 1 year experience in UML, VC++ and Java/J2EE Technologies. Experience may be gained concurrently. Please send resumes to: Thomson Financial, Attn, HR, 22 Thomson Place, Boston, MA 02210. Fax: 617-856-5601. We are an equal opportunity employer.

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Sr. Systems Analyst. Job location: Jacksonville, FL. Duties: Analyze user requirements, procedures & problems to automate processing or to improve existing computer system. Confer w/ personnel of organizational units involved to analyze current operational procedures, identify problems, & learn specific input/output requirements, such as forms of data input, how data is to be summarized & formats for reports. Evaluate effectiveness of existing info processing systems & develop new systems to improve production/workflow as required, & determine if program/program change is possible w/in existing system. Plan/prepare technical reports, memoranda, & instructional manuals to document program development. Specify operations of equipment & computer programs w/workflow charts & diagrams. Maintain system after implementation. Design, develop, maintain & support applications in CL/400, RPG/400 & Synon/2e in IBM AS/400 environment. Utilize COOL:2e (Synon/2e), SEOUEL, & Electronic Data Interchange & loan origination systems. Requires: B.S. Comp., Elec. Engin., a related field or for. equiv., 2 yr. exp. in job offered or as a Programmer Analyst; 2 yr. exp. on IBM AS/400 using SYNON/2E. Send resume to InTuition, Inc., Debbie Perryman, 6420 Southpoint Pkwy., Jacksonville, FL 32216.

SOFTWARE ENGINEER

Research, design, and development of computer software systems, in conjunction with hardware product development, applying principles and techniques of computer science, engineering and mathematical analysis; analyses of software requirements to determine feasibility of design within time and cost constraints; consults with hardware engineers and other engineering staff to evaluate interface between hardware and software, and operational and performance requirements of overall system; formulate and design software system, using scientific analysis and mathematical models to predict and measure outcome and consequences of design; develop and direct software system testing procedures, programming, and documentation; consult with customer concerning maintenance of software system; coordinate installation of software systems. Knowledge of UNIX, Windows, C, C+, Visual C++, Java, Pasal Fortran, Perl, Tel/Tk, HTML, DHTML. CGI, ASP, JavaScript, VB Script, Oracle, MS Access. Requires Bachelor Degree in Computer Science, Engineering or related field. Send resume to Sandi Duchesne, SAIC, Sr. Group H/R Mgr., 8301 Greensboro Drive; MS E-12-7, McLean, VA 22102.

**Computer Support Specialist** to install, modify and make minor repairs to computer hardware and software systems and provides technical assistance and training to system users: diagnoses computer hardware, software and operator problems; performs or instructs hardware and software installation, testing and repairs; perform network designing, Server installing and TCP/IP setting. Enters and modifies commands and observes system functions to verify correct system operation. Answers technical inquiries in person or via telephone concerning system operations. Writes or modifies settings or commands for programs to run under different operating systems. BS in , Computer Science or related field required. $24,000/yr, 40 hrs/wk. Send resume to Attn: Ivy Chang, 5015 Oakbrook Pkwy, #600, Norcross, GA 30093 or fax it to (770) 279-1946. Job Code: HS-ED

SYSTEMS/BUSINESS ANALYST: Rome, GA, Produce requirements documentation for computer software developed for commercial use to support in-house applications Functions as the principal business analyst for VP in charge of software product development Assist VP in the life cycle mgmt of computer software developed by the co. Communicate w/ exec project sponsors, mktg & user reps to understand clients' needs for the proposed system & address concerns re business & applications. Communicate w/ product users & propose modifs for product functionality into software programming specs. Utilize accepted vocab of the application domain to focus discussions w/ users & clarify user goals & use cases. Utilize computer systems analysis & design techniques, incl object-oriented design, to assist computer programmers to translate business system requirements into computer programming specs. Bachelor's or equivalent in Computer Science, Business Admin., Commerce or Engineering & 2 yrs exp in the job offered or in a related business, systems analysis position involving definition, development & implementation of computer systems to meet clients' business objectives. 2 yrs exp must include exp in using C++/Delphi & Object Oriented analysis & development. 40 hrs per wk. $60K per yr. Must have legal authority to work in U.S. Forward resume to Universal Tax Systems, 6 Mathis Drive, N.W., Rome, GA 30164-2729.

SAP Analyst. Lancaster, SC. Duties: Support SAP software system & its efforts w/ the facility at an expert level by providing programming, project implementation, & training. Responsible for future implementation of SAP R/3 modules & upgrades. Perform report writing in all modules currently in place (SD, MM, PP, CO, FI, AM, OM). Coordinate adjustment & mapping of configuration of SAP/R3. Coordinate EDI activities from & to all customers of ZF Lemforder North American Operations. Document training needs, conduct user training & coordinate training classes for users. Maintain SAP/R3 library & training documentation. Troubleshoot SAP/R3 user-related problems. **Reqs: Bachelor's or foreign equiv. In Mech. Eng., Comp. Eng., or a closely related field & 2 yrs exp in the job offered or 2 yrs exp as a SAP Consultant or Production Engineer. Exp which may have been obtained concurrently must include 2 yrs exp programming, report writing, & troubleshooting in the SAP/R3 module. To apply, mail resume to Mr. Paul L. Stachura, ZF Lemforder Corp., 946 Quality Dr, Lancaster, SC 29721.**

SOFTWARE ENGINEERS (10 positions): require Bachelor's in Engineering/Computer Science/Mathematics/Science or closely related major with two years experience providing skills in described duties, at $70,000 per year; Senior Software Engineers (8 positions) with Master's and two years experience, at $75,000 per year. Provide on-site consulting in design, analysis, analysis and development of software application in Oracle, DB2, SOL Server and Sybase; e-commerce and web applications development in Microsoft, Java and related technologies; network management systems development with Netscape Server and related tools; SAP R/3 applications on Windows with DOS and ABAP/4 and related modules. 40% travel to client sites in the United States. Mail resumes to: YASH Technologies, Inc., 2100 Parklake Drive, NE, Suite F, Atlanta, GA 30345-2167.

# IT Careers in E-Business

**While the surge in online retail and e-business received real energy in the late 1990s, there were some companies who ventured into the unknown much earlier. Among them was 1-800-Flowers, which went online in 1992 and was the first merchant listed by America Online.**

"We define ourselves as a technology company," explains Enzo Micali, senior vice president and chief technology officer for **1-800-Flowers**. "We were one of the pioneers."

Micali says the company continuously searches for talented people. "We are a growing company, with analysts estimating that we will have revenues of more than $500 million this year," he explains. "We need people who have worked in large-scale environments, who have established processes and procedures. But I'm also looking beyond what you know right now. We need people who are willing to learn and engage, who are adaptable and enthusiastic."

Adaptability is a key at **1-800-Flowers**. More than half the company's revenues this year will derive from online sales, and more than half its sales are non-floral. That means an ever-growing number of affiliates and partners.

Technology projects range from developing home agent call center capabilities to IT professionals who work in marketing, improving the interactivity of the online site. Site development for **1800flowers.com** and upgrades occur on a continuous basis, and the company serves as a Beta site for many new technologies.

In addition to the strong Internet presence, **1-800-Flowers**. also operates an extranet, Bloomlink, that began as a network for the company's floral partners. The infrastructure worked so well that its use is expanding to non-floral affiliates and partners.

"We offer opportunities ranging from support of internal operations to development of complex systems that drive our business," Micali adds. "Technology has propelled us far, and we're highly respected. It's a given that you'll receive the support you need here."

For more job opportunities with e-business firms, turn to the pages of ITcareers.
- If you'd like to take part in an upcoming ITcareers feature, contact Janis Crowley, 650.312.0607 or janis_crawley@itcareers.net.
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Project Manager

Manage multiple IT projects such as business applications, architecture, data marts, operational data stores and infrastructure. Take responsibility for the complete project lifecycle from developing tactical and strategic approaches to cost/benefit analysis and risk assessment.

Web Application Developer

Analyze requirements, design and program applications for Enterprise e-Business projects, working closely with consultants, business analysts and other developers. Applications will primarily be deployed on WebSphere servers running on AIX platforms.

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## Lotus

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only thinking of IBM's profits."

IBM says Passport Advantage and its Software Maintenance provision assures customers have support, and streamlines the acquisition and maintenance of IBM products, including those from its Lotus and Tivoli Systems subsidiaries. As part of the retooling, IBM eliminated individual technical support programs for Lotus and Tivoli.

Under the revamped program, IBM, Lotus and Tivoli customers can no longer purchase licenses for software upgrades without also purchasing technical support. In the past, cost-conscious or highly trained users often opted out of long-term base support contracts. Those users now have no choice but to pay for support along with licenses that guarantee access to software upgrades. However, premium technical support services continue to be priced separately.

IT executives can waive Software Maintenance after the first year of a new license, but will lose access to software upgrades and support by doing so. They also will have to pay a hefty penalty if they decide to rejoin later.

Paul Herzog, technical director for PowerPage, an electronic commerce hosting and development company in Rockaway Township, N.J., says he recently received a reminder saying his licensing costs for DB2 and WebSphere would increase. "My thought was 'Oh geez, here it comes,'" he says.

Herzog says traditionally IBM support is "not that great. You can eventually get to someone who knows something, but it can take a lot of time and money."

With Lotus and Tivoli customers folded into the same support structure, Herzog says he fears support will get worse. "They are going to need more people, and you have to wonder how qualified they will be and how it will drive up costs," he says.

Companies that have not been buying one of Software Maintenance's components — either software upgrades or technical support — will see a cost increase, according to a letter IBM sent customers in July. The amount differs from company to company because it is based on a complex, volume-based points system that IBM uses to calculate pricing discounts.

IBM officials say companies that already purchase maintenance and support services will have similar costs under Software Maintenance. Passport Advantage also has other provisions such as unlimited support calls; authorization for any technical staff to initiate support calls; and the aggregation of all IBM software purchases as a means to calculate deeper discounts.

"It sounds like a subtle way to encourage people to buy more IBM products," says Jonathan Spira, chairman of consulting group Basex. "Everything you buy adds up to better pricing."

But IBM officials say it is what customers want. "We find that customers have questions [about products they buy], especially in that first year," says Rob Shook, director of worldwide volume software licensing for IBM. "We think customers will be happier with supported products."

IBM will work with customers who see what they consider to be unreasonable licensing increases, Shook adds.

However, many IT executives would rather retain the flexibility they previously enjoyed with their maintenance and support costs. Many buy technical support some years but not others, or for some products and not others, as a way to control costs. Some contract with consultants for support or have spent thousands of dollars to train in-house support staff in IBM's or Tivoli's Professional Certification Programs or as Certified Lotus Professionals (CLP), a qualification that proves technical support expertise.

A recent survey on CLPs conducted for Lotus shows that 68% of corporations and consultants have CLPs on staff.

Dave Bailey, e-commerce and messaging architect for Imerys and a CLP, canceled support on 3,000 Notes clients but retained upgrade rights on his last licensing contract. He has both support and maintenance on his servers. "I don't need support for the clients, which saved $10,000 over last year, and that was with 700 more users," he says. If he renews his client maintenance license when it expires, he will be converted to Software Maintenance and will again pay for technical support.

However, like others, Bailey was unfamiliar with the effects of the licensing changes.

"Maybe I won't renew my maintenance," he said when told he would also have to pay for technical support. "I have to talk to my Lotus rep about this. They tend to be flexible when I complain about these things."

However, if licenses are not renewed and IT executives reconsider at a later date, they will have to pay a penalty. The penalty varies by product and customer status under IBM's pricing structure. An "A" level customer with a Domino Mail Server would pay a penalty equal to 214% of the cost of Software Maintenance renewal fee or $214 per $100 of licensing.

It isn't only enterprise customers that are feeling the licensing squeeze.

Chad DeMeyers, sales director for Eagle Technology Consultants is concerned because his company provides technical support to Lotus customers.

"One of my fears is that people won't want us to support them because they are now paying IBM to do it," he says. ■

### IBM licensing changes

**IBM has changed the volume-licensing program for its software, including that made by Lotus and Tivoli.**

**New:** All software acquisitions under Passport Advantage include Software Maintenance, a combination of software upgrades and technical support.

**Old:** Software upgrades and technical support were separate options.

**New:** No limit to number of technical staff that can contact technical support for help.

**Old:** Enterprise had to designate certain internal contacts for technical support.

**New:** Software Maintenance renewal is optional after the initial licensing contract expires.

**Old:** User had option to discontinue software subscription or technical support individually.

**New:** Technical support during normal business hours plus 24-7 Severity 1 Emergency support for critical issues as defined by the customer.

**Old:** Critical issue was not defined by the customer.

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# PeopleSoft unveils mobile client

■ **BY ANN BEDNARZ**

BOSTON — Forthcoming upgrades of PeopleSoft's customer relationship management suite will fill some gaps in the package's offerings, including the ability to work with applications offline and synchronize calendar and contact information with Microsoft Outlook.

New mobile client software will be available in Version 8.4 of PeopleSoft's Web-based CRM suite, due out in the first quarter of next year. During the past several months, PeopleSoft has shifted its software lineup from a client/server model to one that requires no code to run on clients. But missing from the Web-based CRM applications is a way for users to work with an application when they are not connected to a network — that's the gap the forthcoming mobile client aims to fill.

Salesforce automation and field service will be the first CRM applications PeopleSoft outfits with mobile features, because the demand is highest among those users, says PeopleSoft CTO Rick Bergquist. The client software required to run the applications offline will be roughly 1M or 2M bytes in size, he says. User interfaces have been designed for laptops and PocketPC handheld devices, taking into account the screen sizes of each.

Bergquist presented a preview of the mobile client last week on the Boston leg of PeopleSoft's customer road show.

Craig Berkson, CIO of Thomson Financial's Portfolio Solutions Group, shared with the crowd his company's experience upgrading from Vantive 8.6 to PeopleSoft 8 CRM. (PeopleSoft entered the CRM market with its 1999 acquisition of Vantive. Launched in June, PeopleSoft 8 CRM is the first fruit of that union.) To date, 160 employees from two divisions of Thomson use the PeopleSoft applications.

Berkson praised PeopleSoft 8 CRM for reducing the desktop administration headaches associated with client/server software. He also acknowledged that there are a few areas he'd like to see PeopleSoft refine. Outlook integration is something his users miss, he says.

PeopleSoft's sales applications include calendar functions, task lists and contact information. But the ability to integrate Outlook with those both applications and to synchronize information between them makes life easier — and more productive — for end users. PeopleSoft is adding Outlook support in Version 8.1, which is due out this month.

PeopleSoft: www.peoplesoft.com

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## BackSpin Mark Gibbs

# Activating catastrophe

In Backspin over the past few weeks, I have discussed software design and marketability issues (see www.nwfusion.com, DocFinders: 7246, 7247 and 7248).

This week, I want to discuss a related topic: A disaster Microsoft is creating for us in the name of preventing theft of its intellectual properties.

The root of the problem is a registration mechanism the company has produced called the Microsoft Product Activation system, which applies to Windows XP, Visio 2000 and eventually (so Microsoft plans) to most of the company's products that have significant price tags.

Product Activation is a perversely complicated system that inspects your PC to create a code that, in essence, "fingerprints" your system.

That fingerprint, combined with the product identification code (that long character sequence on the back of the CD jewel case), is passed over an Internet connection (or phoned in if you're not connected) to Microsoft. Microsoft, in turn, generates an Activation Code that lets you "unlock" the product.

If you want a lot more of the grisly, arcane details of what goes on in the Activation Process, you absolutely have to check out Fully Licensed GmbH's XP-related content (www.nwfusion.com, DocFinder: 7342), which goes into hideous detail and even provides executables to report on the fingerprint and details of an activated system.

Depending on the product, you are allowed a maximum of so many days and/or launches before you register/activate, after which it stops working.

So far, so good but ... if you should modify your hardware configuration or your PC clock is wrong or other changes or conditions occur, the software assumes foul play is afoot and demands you reregister (I have also seen comments — so far unsubstantiated — that there are limits to reregistration after which the product becomes nonfunctional).

Does Product Activation apply to volume licensing of Microsoft products? Nope. Which means it will only apply to branch offices (if they buy locally), teleworkers, small businesses and consumers.

So we might ask "Why does Microsoft think that Product Activation is necessary? What is the point of this system?" This is the answer from Microsoft (www.nwfusion.com, DocFinder: 7341): "to reduce a form of piracy known as 'casual copying' or 'softlifting.' ... This form of piracy is prevalent and has been estimated by some industry trade groups to account for a staggering 50% of the economic losses due to piracy."

OK, Bill, but let's not kid ourselves. Stamping out this kind of piracy — and no one is saying it isn't piracy; your End User License Agreement prohibits unauthorized duplication and that's what Product Activation is intended to stop — won't increase sales.

Anyway, the "economic losses" are your problem, and any solution you might concoct should not affect nonpirates. But, I can guarantee Product Activation will make life more complex for all users, nonpirates and pirates alike.

But "No!" Microsoft claims. From the same document I cited above: "Corporate customers should only be minimally impacted, if at all."

Minimally impacted? Since any "impact" beyond the usually tedious installation process (including the endless reboots) will, without doubt, cost users real time and real money, I find that hard to believe.

Microsoft has taken a complex product and made it even more complex for reasons that have nothing to do with improving product functionality or reliability. On the contrary, the added complexity results in a system that has new problems. In other words, Product Activation can go wrong.

I know because it happened to me. I installed legal copies of XP and Office XP and wasted 75 minutes talking with Microsoftoids on the phone. I'll tell you about it next week.

*In the meantime, has Microsoft Product Activation ruined your day? Tell me about it at nwcolumn@gibbs.com.*

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## 'NetBuzz News, insights, opinions and oddities

### Paul McNamara

**Think of the possibilities**

Forced to choose between those calling Dean Kamen's Segway the 21st century's first important invention and those who see the thing as a scooter powered by hype, I'll cast my lot with the dreamers.

But that's a false choice.

Despite all the "Hatfields vs. McCoys" press reaction that followed Segway's televised debut, there is actually no way — or need — to settle this dustup right away.

However, having invested quite a few column inches in ruminating about what was known as "Ginger" and "It" back in January, I'd be fibbing if I didn't say the unveiling struck me as anticlimactic.

The problems with Segway are as obvious as they are well chronicled: weight, range, cost, security, safety and weather-worthiness, to name just a few.

But the thing will keep you upright on two wheels without any effort on your part to maintain balance. It'll get you from here to there a lot faster than walking, again, without you lifting a sneaker. . . . Don't know about you, but I'd like to try that ride.

However, beyond simple curiosity lies a host of possibilities — yes, tempered by obstacles — for what Segway might accomplish today and in the future.

Here's where my mind wandered: How about Segway being a substitute for golf carts? Despite needing twice as many, you'd have the same number of wheels on the course as with conventional carts. You'd need some kind of stand on which to balance your bag.

Here's the advantage: I slice and my playing partner hooks, meaning we spend way too much time riding to each other's drive. Not so if we're on Segways.

If a fleet of Segways could reduce the average time of a recreational round of golf [illegible] hours it would be a boon for that industry, not to mention the family [illegible] golfers who could devote less of their weekends to their addiction.

Sure, Segway golf won't change life as we know it, but that's just one possibility.

Smart people are going to come up with a lot better.

**Who says there's no justice in America?**

A month ago we brought you the outrageous tale of San Jose company Valiant Networks and its efforts to strong-arm laid-off workers into returning their signing bonuses.

Cause for that request? Turns out the employees signed preemployment agreements calling for return of the bonuses if their employment with Valiant lasted less than a year. They presumed, naturally enough, that the clause was intended to prevent them from bolting for greener pastures, not to further impoverish them in the event of a quick layoff.

Well, the California Department of Industrial Relations caught wind of Valiant's audacity and essentially told company executives to give the money back or find themselves in a fight with someone they cannot bully.

Bully for the Department of Industrial Relations.

There's more: Valiant has gone belly-up and is liquidating assets.

It's never cause for joy when a company goes out of business . . . but some bankruptcies engender fewer tears than others.

**An unusual burst of candor**

Here's the candidly amusing headline on a public relations pitch that would otherwise have been ignored:

"Wireless entertainment company receives bucks in a market that sucks!"

The good news is that Airborne Entertainment — "a creator, aggregator and distributor of mobile games and other entertainment programming specifically for mobile devices" — has landed $6.3 million in venture funding from a variety of sources including Bell Mobility Investments and Telesystem.

The bad news is that game makers are what pass for hot property in mobile applications.

*Fourteen writing days left 'til Christmas. The address is Buzz@nww.com.*

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